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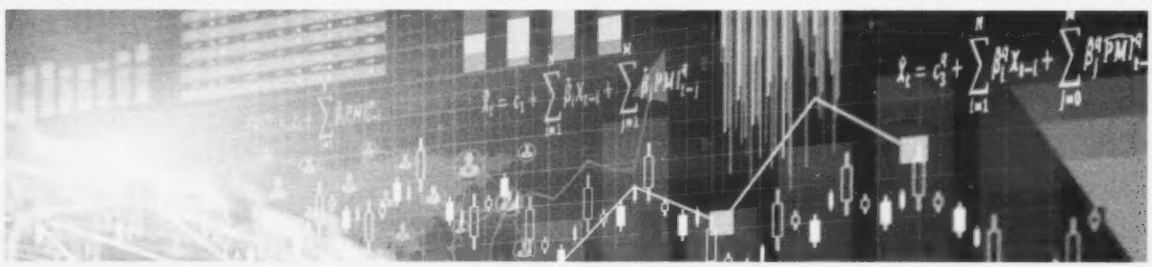

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The Political Impact of Immigration: Evidence from the United States

by

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Abstract

In this paper we study the impact of immigration to the United States on the vote for the Republican Party by analyzing county-level data on election outcomes between 1990 and 2010. Our main contribution is to separate the effect of high-skilled and low-skilled immigrants, by exploiting the different geography and timing of the inflows of these two groups of immigrants. We find that an increase in the first type of immigrants decreases the share of the Republican vote, while an inflow of the second type increases it. These effects are mainly due to the local impact of immigrants on votes of U.S. citizens and they seem independent of the country of origin of immigrants. We also find that the pro-Republican impact of low-skilled immigrants is stronger in low-skilled and non-urban counties. This is consistent with citizens' political preferences shifting towards the Republican Party in places where low-skilled immigrants are more likely to be perceived as competition in the labor market and for public resources.

Bank topics: International topics; Labour markets
JEL codes: F22, J61

Résumé

Nous étudions l'incidence de l'immigration aux États-Unis sur les votes en faveur du Parti républicain. Pour ce faire, nous analysons des données par comté sur les résultats des élections pour la période de 1990 à 2010. Notre principal apport consiste à isoler l'effet des immigrants peu qualifiés et des immigrants hautement qualifiés sur l'orientation du vote, en nous appuyant sur la répartition géographique de ces deux groupes et le moment de leur arrivée. Nous constatons qu'une hausse de l'afflux migratoire de travailleurs hautement qualifiés abaisse la proportion d'électeurs qui votent pour les républicains, tandis qu'une hausse de l'afflux migratoire de travailleurs peu qualifiés l'augmente. Ces effets semblent indépendants du pays d'origine des immigrants et s'expliquent surtout par l'incidence locale de ces derniers sur les votes des citoyens américains. Par ailleurs, nous constatons que l'incidence pro-républicaine de l'afflux d'immigrants peu qualifiés est plus forte dans les comtés non urbains ainsi que dans les comtés où la population locale est peu qualifiée. Ce résultat sous-entend que les préférences politiques des citoyens se réorientent vers le Parti républicain dans les comtés où les citoyens perçoivent les immigrants peu qualifiés comme une source de concurrence sur le marché du travail et pour l'accès aux biens publics.

Sujets : Questions internationales; Marchés du travail
Codes JEL : F22, J61

Non-technical summary

Political leaders' positions on the issue of immigration can be an important determinant of their electoral success or failure. Immigration took center stage in the 2016 U.S. presidential elections and its aftermath as now-President Donald Trump took strong stands on illegal immigration, the construction of a border wall, refugees from Syria, and "sanctuary cities". The "Brexit" vote in the United Kingdom and recent political elections in Germany (2017) and Italy (2018) have highlighted the controversial political role of immigration and the electoral success of strong anti-immigration stands.

Existing studies on the effect of immigrants on election outcomes have mainly focused on Europe and provide evidence consistent with the idea that right-wing parties stand to gain votes from the inflow of immigrants. The anti-immigration stance of those parties, it appears, has become more appealing to citizens as new immigrants have grown to have a larger local presence. Does this rhetoric work in the U.S.? Are voters in a country built on successive generations of immigrants driven to vote Republican because of increasing immigration pressure?

The substantial inflow of immigrants to the United States during the last 30 years has significantly shaped the U.S. economy and society. Immigrants affect native workers' opportunities in the labor market, their productivity, and their specialization (see, for example, the book by Borjas (2014) and the recent review by Peri (2016)). Immigrants can also have an impact on other aspects of the host country's economy (for example through fiscal effects, innovation and consumption), as well as on its culture, social norms, and sense of security. In addition, immigration can affect political outcomes through voting behavior. In this paper, we analyze the latter outcomes but, in doing so, we also need to consider the impact of immigration through the other channels. Indeed, we assume that, through their votes, U.S. citizens respond to the perceived economic and psychological costs and benefits (through the labor-market, fiscal and non-economic mechanisms) of having more immigrants in their county. We posit that their probability of voting for the Republican Party goes up if the perceived cost of an increase in immigrants (high-skilled or low-skilled) is larger than the perceived benefit. In this simple framework, we associate the Republican Party with more restrictive immigration policies, which it usually championed in the 20 years we consider. Immigration may also affect the outcome of elections by extending the pool of voters, i.e. directly, by adding the new votes of recently naturalized immigrants.

Our strongest and most significant finding is that an increase in high-skilled immigrants as a share of the local population is associated with a strong and significant decrease in the vote share for the Republican Party. To the contrary, an increase in the low-skilled immigrant share of the population is associated with a strong and significant increase in Republican votes. These effects are common to presidential, House and Senate elections. Combining the two effects, the net impact of the increased immigrant share on the average U.S. county was negative for the Republican Party between 1990 and 2010. This was because immigration in this period was, on average, college-biased. In addition, we find evidence suggesting that the main effect of immigrants on Republican votes comes from the indirect impact on preferences of existing voters.

Compared to the previous findings from European countries, the evidence presented in this paper is not inconsistent. Immigrants to Europe have been, on average, less skilled than immigrants to the United States, and the local labor force in Europe is also less skilled (lower share of college-educated) than in the United States. Our analysis shows that the local economic conditions of a region, together with the skill level of immigrants, affect citizens' perceived impact of immigration and their vote response. Specifically, areas with low education levels and low urbanization may be more ready to embrace nationalistic views in response to low-skilled immigrants. This seems as true in the U.S. as in Europe.

1 Introduction

Political leaders' positions on the issue of immigration can be an important determinant of their electoral success or failure. Immigration took center stage in the 2016 U.S. presidential elections and its aftermath, as now-President Donald Trump took strong stands on illegal immigration, the construction of a border wall, refugees from Syria, and "sanctuary cities". The "Brexit" vote in the United Kingdom and recent political elections in Germany (2017) and Italy (2018) have highlighted the controversial political role of immigration and the electoral success of strong anti-immigration stands. That immigration has an effect on political outcomes has been pointed out in the academic literature (see, for example, Ortega (2005) and other works discussed in Section 2). Yet, to our knowledge, no empirical study has looked at the direct connection between election outcomes and immigration in the United States.[1] We tackle this question by analyzing the link between immigration and the vote share received by the Republican Party, across U.S. counties and over time, in the 20-year election cycle between 1990 and 2010.

Three aspects of this paper are novel. First, we combine economic and demographic data from the U.S. Census and American Community Survey with data on electoral outcomes, for all types of elections, from the National Library of Congress at the U.S. county level. We exploit the large variation in immigration across U.S. counties and time to identify the correlation between immigration and votes to the Republican Party. Second, we focus on the distinction between high-skilled (college-educated) and low-skilled (non-college-educated) immigrants and exploit their differential variation, driven by past networks and differences in skills across countries of origin to separately identify a causal effect of each group. These two types of immigrants affect the economy and labor markets differently (see, for instance, Ottaviano and Peri (2012) and Card (2009)) and, it turns out, they have a very different impact on the vote of U.S. citizens. Third, we allow for heterogeneous effects of high- and low-skilled immigrants on voting outcomes depending on the economic and demographic characteristics of the receiving county. In analyzing these heterogeneous effects we shed light on the possible mechanisms through which immigration may have impacted the vote share of the Republican Party.

The substantial inflow of immigrants to the United States during the last 30 years has significantly shaped the U.S. economy and society. Immigrants affect native workers' opportunities in the labor market, their productivity, and their specialization (see, for example, the book by Borjas (2014) and the recent review by Peri (2016)). Immigrants can also have an impact on other aspects of the host country's economy (for example through fiscal effects, innovation and consumption), as well as on its culture,

[1] One partial exception (that we know of) is a recent paper by Baerg et al. (2014), which estimates a negative impact of the share of unauthorized workers on the proportion of votes going to the Democrats, focusing only on the U.S. state of Georgia. As we document below, there are several papers analyzing the impact of immigrants on voting in European countries.

social norms, and sense of security.[2] In addition, immigration can affect political outcomes. In this paper we analyze the latter outcomes but, in doing so, we also need to take into account the impact of immigration through the other channels. Indeed, we assume that, through their votes, U.S. citizens respond to the perceived economic and psychological costs and benefits – through the labor-market, fiscal and non-economic mechanisms – of having more immigrants in their county. We posit that their probability of voting for the Republican Party goes up if the perceived cost of an increase in immigrants (high-skilled or low-skilled) is larger than the perceived benefit. In this simple framework we associate the Republican Party with more restrictive immigration policies, which it usually championed in the 20 years we consider.[3] Immigration may also affect the outcome of elections by extending the pool of voters, i.e. *directly*, by adding the new votes of newly naturalized immigrants. However, we find evidence suggesting that the main effect of immigrants on Republican votes comes from the indirect impact on preferences of *existing* voters.[4]

Our strongest and most significant finding is that an increase in high-skilled immigrants as a share of the local population is associated with a strong and significant decrease in the vote share for the Republican Party. To the contrary, an increase in the low-skilled immigrant share of the population is associated with a strong and significant increase in Republican votes. These effects are common to presidential, House and Senate elections. Combining the two effects, the net impact of the increased immigrant share on the average U.S. county was negative for the Republican Party between 1990 and 2010. This was because immigration in this period was on average college-biased.[5] Our results are robust to instrumenting the two types of immigration with shift-share instrumental variables (IV) based on the historical (1980) location of immigrants by origin, across U.S. counties, augmented with the skill-specific inflows of immigrants in the 1990-2010 period. Including a rich set of dummy variables and several controls at the local level (county and commuting zone) to address lingering concerns about omitted variables does not change the estimates. Moreover, testing whether past electoral outcomes affected the inflow of high- or low-skilled workers shows no evidence of such reverse causation.

Those described above are average effects across U.S. counties. The perceived costs and benefits of immigrants, however, should differ according to the local characteristics of the county, and the heterogeneous effects across counties should depend on local

[2]For example, Giuliano (2007) and Alesina and Giuliano (2011) show how immigrants affect the transmission of social norms. Butcher and Piehl (1998), Chalfin (2015) and Spenkuch (2013) analyze the effect of immigration on crime rates in U.S. cities.

[3]Empirical evidence by Facchini and Steinhardt (2011) and Conconi et al. (2012) suggests that Republican legislators are less likely to vote for pro-immigration policies compared with Democratic ones.

[4]Note that existing voters are those who are already citizens, i.e. natives (U.S.-born), who represent the large majority of voters in most electoral districts, and naturalized immigrants who can vote as well.

[5]In addition, some specifications suggest that the negative Republican vote response to high-skilled immigrants was stronger than the positive Republican vote response to low-skilled immigrants.

labor-market characteristics, on the extent of local fiscal redistribution and on non-economic characteristics of citizens, consistent with these perceptions. This is indeed what we find. The estimates show that the pro-Republican effect of low-skilled immigrants was particularly strong in counties where the share of unskilled natives was higher, where economic activity was less dense, and where the county was prevalently non-urban. These findings are consistent with the fact that low-skilled natives and those living in less dynamic and more rural economies are more likely to feel in competition with low-skilled immigrants. At the same time, we find evidence of a pro-Democrat shift in response to high-skilled immigrants in counties where the share of low-skilled natives was large, but the impact was still significant and pro-Democrat in counties with a large share of high-skilled natives. These findings are consistent with an overall perceived positive effect of high-skilled immigrants on citizens, which is stronger where citizens are unskilled. Overall, these effects are likely to be driven by a combination of labor-market effects based on relationships of complementarity and substitutability and, in the case of high-skilled immigration, positive externalities (for example, through innovation) and positive fiscal effects (through greater tax revenues). This is consistent with empirical evidence that fiscal transfers from highly educated immigrants to natives are positive (see Smith and Edmonston (1997)) and that high-skilled workers benefit the local economy and wages (see Peri et al. (2015)).

By providing systematic and robust evidence on the relationship between U.S. immigration and voting outcomes, we are also able to shed light on "conventional wisdom" on the topic and on puzzles in the literature. Anecdotal evidence suggests, and we confirm in our data, that on average immigration in U.S. counties reduces the Republican vote share. Political scientists and analysts seem to read this evidence as driven by a "pro-Democratic Party" direct political effect – i.e. the idea that naturalized immigrants vote predominantly for the Democratic party, which has a pro-immigrant platform – and by the fact that this effect dominates whatever indirect effect immigration has on the way existing voters vote.[6] At first sight, this interpretation may seem consistent with the empirical evidence: an increase in the share of citizen (voting) migrants reduces the Republican vote share, while an increase in the share of non-citizen migrants has no effect on average (see Mayda et al. (2016)). However, a closer look suggests that the main impact of immigration on voting outcomes comes from the skill level of immigrants – which affects the voting behavior of existing voters – and *not* from whether or how naturalized immigrants vote. We discuss this point further in the next section.

Not only is systematic evidence on the link between immigration and election outcomes scarce in the case of the United States, but the little evidence that does exist is puzzling in light of the results found for other countries. For example, several papers on continental European countries find that immigrants increased the electoral vote share of right-wing, anti-immigration parties (see Barone et al. (2016) and Halla et al. (2017)).

[6]For example, in a 2014 background paper for the Center for Immigration Studies (CIS), Gimpel (2014) states: "... the enormous flow of legal immigrants to the country has remade and continues to remake the nation's electorate in favor of the Democratic Party."

What explains the opposite results across the two sides of the Atlantic? Why is the average political impact of immigration (on conservative parties' votes) positive in the case of European countries and negative in the case of the United States? Our analysis shows that the two sets of results are not inconsistent with each other. Immigrants to Europe have been, on average, less skilled than immigrants to the United States, and the local labor force in Europe is also less skilled (lower share of college-educated) than in the United States. Our analysis shows that the local economic conditions of a region, together with the skill level of immigrants, affect citizens' perceived impact of immigration and their vote response. Specifically, areas with low education levels and low urbanization may be more ready to embrace nationalistic views in response to low-skilled immigrants. This seems as true in the U.S. as in Europe. It is also in line with the results of the 2016 "Brexit" referendum in which, following the message of right-wing and anti-immigration parties, most non-urban areas outside of London voted for the United Kingdom to leave the European Union, while the urban, high-skilled, and densely populated region of London voted to stay within the European Union. This suggests that the large recent inflow of immigrants in the United Kingdom had a different impact in the rural low-skilled areas of England than in the urban high-skilled metropolitan London region.

After estimating the impact of increased immigration on the Republican share of votes, we use these estimates and the recent growth in immigrant populations to see how much of the recent shift of votes toward the Republican Party (in the 2012 and 2016 elections) can be predicted using our empirical model with heterogeneous effects. We find that about 22% of the variation in the growth of votes for the Republican party across U.S. counties can be explained by the estimated marginal effect of immigration in the specification that allows for different skill groups and heterogeneous effects.

The rest of the paper is organized as follows. Section 2 frames our paper within the existing literature. In Section 3 we lay out a simple empirical framework that characterizes the effect of immigrants and motivates the estimating equation. We then describe the data and how we construct the key variables in Section 4. In Section 5 we discuss identification, followed by the main empirical results in Section 6. In Section 7, we consider potential channels and investigate heterogeneity of the effects across counties. In Section 8 we perform exercises to predict changes in the Republican vote share as a function of increases of immigration. Section 9 concludes.

2 Related Literature

Our paper is related to both theoretical and empirical contributions in the literature that analyze the effect of immigration on voting behavior. A few papers examine the voting behavior with respect to immigration policies and show that it is a function of the skill composition of immigrants and natives. The seminal theoretical paper in this literature is Benhabib (1996), which derives the skill composition requirements that would be imposed on potential immigrants, under majority voting, assuming that the

only effect of migration is realized through competition/complementarity in the labor market. Ortega (2005) extends such a model and analyzes the trade-off arising in a dynamic version in which immigrants (or their offspring) gain the right to vote and thus affect the political balance of the destination country, with a lag. The arrival of immigrants, whose skill composition depends on the existing immigration policy, alters the skilled-to-unskilled labor ratio of the workforce in the destination country. This, in turn, affects the current-period skill premium, as well as the skill composition of next period's electorate, hence the political balance and migration policies in the future. On the one hand, skilled (unskilled) natives prefer an immigration policy that admits the complementary unskilled (skilled) immigrants to their country because of their wage effects. On the other hand, the arrival of unskilled (skilled) immigrants potentially shifts the political equilibrium by increasing the number of unskilled (skilled) voters in the next period. These two opposite effects could produce a cycle equilibrium in which the political majority switches from one group to the other. Razin et al. (2011) focus instead on the joint decision of voters on immigration and redistribution policies, respectively. This paper shows that, in terms of immigration and redistribution, a democratic country will produce policies that are consistent with each other so that, when immigration is more open, natives restrict redistribution for fear of net transfers to immigrants, while when immigration is more restricted, natives are willing to allow more redistribution. The theoretical model derives predictions of how natives of different skills prefer more or fewer immigrants as a function of the amount of redistribution provided by the county. Finally, a related line of research investigates empirically how U.S. politicians vote on topics related to immigration policies, as a function of the characteristics of their districts. The main papers in this literature are Conconi et al. (2012) and Facchini and Steinhardt (2011).

While our paper is related to this literature in that it analyzes the connection between immigration and voting, we take a broader view as we analyze how immigration affects the vote of citizens in elections, i.e. without focusing on a specific policy. Nevertheless, our explicit consideration of the skill composition of immigrants and natives is reminiscent of the central role that skill plays in Benhabib (1996), Ortega (2005), Razin et al. (2011), Conconi et al. (2012) and Facchini and Steinhardt (2011).

Another line of inquiry provides indirect evidence for the effect of immigrants on citizens' voting behavior by analyzing what determines the individual preferences of natives about immigration. Scheve and Slaughter (2001) explore the drivers of attitudes towards immigration in the United States using the 1992 NES survey. They find that skilled respondents are significantly less likely to be anti-immigration compared with unskilled ones. Hence, voters' perceptions appear to be consistent with the predictions of a standard labor-market model given that, in the period analyzed by this paper, U.S. immigrants were on average less skilled than natives. Hanson et al. (2007) extend the previous analysis by accounting for the impact of public finance considerations on U.S. immigration attitudes. This paper shows that the negative impact of individual skill on anti-immigration preferences is weaker in counties characterized by high exposure to fiscal pressures commonly associated with certain types of immigration. Other papers

in the literature, such as Mayda (2006), Facchini and Mayda (2009) and O'Rourke and Sinnott (2006), analyze the labor market and welfare channels as determinants of public opinion about immigration across countries. Finally, Card et al. (2012) show that, while the perception of economic gains from immigrants varies by skill level across natives, it is the perception of the impact of immigrants on local culture and amenities that drives their policy preference. Our paper is clearly related to these studies, as voting is an expression of the opinions expressed in these surveys. However, our focus is more broadly on general elections outcomes. This is new and more relevant to assess the impact of immigration on political equilibria.

More directly related to our study are some recent papers that analyze how the inflow of immigrants affects the electoral success of right-wing parties in Europe. In particular, Barone et al. (2016) investigate the effect of immigration on political outcomes in Italy for the 2001, 2006 and 2008 national elections. They find that inflows of immigrants to a municipality increased the share of votes going to a center-right party that was more conservative on immigration issues than the center-left one. Similarly, Halla et al. (2017) estimate the impact of immigrant inflows in Austria on the share of votes for a far-right-wing party (the Freedom Party of Austria). They find evidence of a positive and significant effect at the neighborhood level. Both papers use shift-share instruments à la Card (2001) to isolate supply-driven changes in immigrants and track their effects. Finally, Otto and Steinhardt (2014) estimate the impact of the share of foreign citizens on election outcomes using variation over time across districts in the city of Hamburg between 1987 and 2000. The authors find evidence of a positive correlation between the population share of immigrants in a district and the share of votes received by extreme right-wing parties with a clearly anti-immigration stand, as well as evidence of a negative correlation between the population share of immigrants in a district and the share of votes received by the Green party, which held a pro-immigration position. The authors give a causal interpretation of these results based on a fixed-effects OLS empirical strategy and additional robustness checks, which account for the endogeneity of the location decision of natives and immigrants. Relative to these papers, our paper is the first to focus on U.S. elections, using variation across U.S. counties instrumented with skill-specific shift-share instruments.

Finally, in previous work by the authors on the same topic (Mayda et al. (2016)), we distinguished between citizen and non-citizen immigrants but we did not account for the skill level of immigrants themselves. We showed that an increase in citizen (voting) immigrants as a share of the U.S. population had a homogeneous, negative and significant effect on the share of Republican votes across counties over time. Differently, an increase in non-citizen immigrants had an insignificant *average* effect and significant heterogeneous effects, shifting votes towards the Republicans in the most rural, low-skill and high public-spending counties, but towards the Democrats in all the other counties. In this paper we do not emphasize the distinction between citizen and non-citizen migrants. The reason is that, once we account for the skill level of immigrants themselves by differentiating between high-skilled and low-skilled, we find that increases in the share of citizen vs. non-citizen migrants have similar effects. Specifically, whether we

consider citizen or non-citizen migrants, an inflow of high-skilled immigrants decreases the share of the Republican vote, while an inflow of low-skilled immigrants increases it. Our current interpretation of the old results (Mayda et al. (2016)) is that the "pro-Democratic Party" effect of an increase in the share of citizen migrants is driven by the fact that these people are, on average, more skilled than the average U.S. citizen. Non-citizen immigrants are instead more balanced between skilled and unskilled and hence have no significant impact on the vote.

3 Empirical Model

In this section we present a simple empirical framework that allows us to organize and discuss the impact of immigration on the Republican share of electoral votes. Our goal is to focus on this impact by distinguishing between the share of more- and less-educated immigrants. A change in the share of immigrants, high- or low-skilled, will affect the electoral preferences of citizens and change the share of votes going to the Republican Party. Although immigrants could also affect voting outcomes directly, i.e. through the new votes of recently naturalized immigrants, it turns out that, empirically, the indirect effect through the preference shift of existing voters is the largest. Hence, we focus on this indirect effect. Consider r_{it} as the probability of voting Republican for an average U.S. citizen in county i and year t and expressed by the following general function:

$$r_{it} = f^i(\frac{L_{it}}{Pop_{it}}, \frac{H_{it}}{Pop_{it}}, X_{it}) \tag{1}$$

where L_{it}/Pop_{it} and H_{it}/Pop_{it} are the low-skilled and high-skilled immigrant shares of the population in county i and year t and X_{it} are other socio-economic and demographic factors affecting the preference of the average citizen for the Republican Party. By including the superscript i in the function f, we allow the relationship between citizens' votes and immigration to be county-specific. Later in the paper we will be more explicit on how the effect depends on local socio-demographic characteristics. Expression (1) is a "behavioral" representation of the link between citizens' votes and the inflow of immigrants. The only structure that this representation imposes on the relationship is that there may be an effect of high- and low-skilled immigrants on the perception of citizens and it may affect their vote. One can think that a vote for the Republican Party is a vote for less immigration and/or less redistribution. If low-skilled immigrants are perceived to be "costly" by citizens – either because they change local amenities or because they cause a labor market or fiscal drag on citizens – then such a mechanism would imply a larger probability of voting for the Republican Party when the number of low-skilled immigrants increases.

Next we consider the total differential of expression (1) given a change in the size of each group of immigrants (low-skilled and high-skilled), assuming that the native population and the other variables do not change in county i. We obtain the following expression:

$$\Delta r_{it} = f^i_{NAT,1} * \frac{\Delta L_{it}}{Pop_{it}} + f^i_{NAT,2} * \frac{\Delta H_{it}}{Pop_{it}} \tag{2}$$

The term Δ represents a change of the variable between time t and $t+1$. In expression (2) the term f^i_1 is the partial derivative of the function f with respect to the share of low-skilled immigrants in the local population and it captures the effect of low-skilled immigrants on the Republican voting share. On the other hand, f^i_2 is the derivative with respect to the share of high-skilled immigrants in the local population and it captures the effect of high-skilled immigrants on the Republican voting share. Both are taken at the initial value t. The superscript i implies that this effect can be heterogeneous across counties, depending on who the representative (median) voter is in each county.

If we ignore the superscript i, equation (2) can be the basis to estimate the average (across counties) electoral effect of changes in the number of immigrants. We assume that slowly changing factors affecting the share of Republican votes in a county can be captured by a set of linear fixed effects (s_i), and that national trends can be controlled for with year- and election-type fixed effects (q_t). A set of economic and demographic variables for the county, X_{it}, will absorb some of the remaining important correlates. We obtain the following equation that captures the effect of a change in low- and high-skilled immigrants assuming a homogeneous marginal effect across counties:

$$r_{it} = s_i + q_t + \beta_L \frac{L_{it}}{Pop_{it}} + \beta_H \frac{H_{it}}{Pop_{it}} + \beta_x X_{it} + \varepsilon_{it} \tag{3}$$

Expression (3) is the first specification we bring to the data. It provides a simplified representation of the link between immigration and voting outcomes.

Note that the perception of costs and benefits of low- and high-skilled immigrants is likely to be quite different across counties, depending on the local socio-economic composition of citizens. For instance, non-urban counties with less-educated citizens may more strongly perceive competition from low-skilled immigrants, both in the labor market and in terms of fiscal redistribution. In this case, an increase of these immigrants will lead to a higher share of votes for the Republican Party, which is more likely to advocate for restrictive immigration policies. On the other hand, densely populated, high-skilled counties may perceive low-skilled immigrants as complements in the local labor market. In this case, an increase of these immigrants may result in smaller pro-Republican effects or even pro-Democrat shifts. We consider a specific way in which the heterogeneous effects operate, by assuming that the impact of a change in high- or low-skilled immigrants is a linear function of economic and demographic characteristics of county i, which we call k_i. For simplicity of interpretation, we standardize these characteristics to vary between 0 and 1 and measure them at the beginning of the period, in 1980. This way we can assess how the marginal effect on the vote of citizens changes with the population characteristics in the county and allow the same inflow of a given type of immigrants to have a different impact, depending on the county. We use distinct characteristics of the local population that should be relevant for the operation

of various channels of effect of immigrants on citizens' labor market and fiscal interests. This produces the following estimating equation:

$$r_{it} = s_i + q_t + \beta_L \frac{L_{it}}{Pop_{it}} + \beta_L^1(k_i)\frac{L_{it}}{Pop_{it}} + \beta_H \frac{H_{it}}{Pop_{it}} + \beta_H^1(k_i)\frac{H_{it}}{Pop_{it}} + \beta_x X_{it} + \varepsilon_{it} \quad (4)$$

In this specification we model the impact of low- and high-skilled immigrants as, respectively, the constant effects β_L and β_H in counties with the lowest average value of the characteristic k_i, plus an additional effect equal to, respectively, $\beta_L^1(k_i)$ and $\beta_H^1(k_i)$ in counties with an increasing value of k_i. For instance, if the variable considered is the share of less-educated natives in the labor force (measured as those with a high-school diploma or less), then the county with $k_i = 1$ is that with the largest share of low-educated natives in the population and $\beta_L + \beta_L^1$ is the effect of increasing the share of low-skilled immigrants by one percent of the population, on the Republican vote share in that county. To the contrary, β_L captures the effect of low-skilled immigrants in the county with the lowest level of less-educated natives. A similar interpretation holds for the coefficients β_H and β_H^1 in relation to an increase in high-skilled immigrants. The term $\beta_x X_{it}$ controls for the effects of the county's demographic characteristics on the vote share of the county. ε_{it} captures the remaining idiosyncratic factors affecting the Republican vote share and has an average of 0.

4 Data Description and Correlations

For each county i and year t we define the following population groups: the overall population Pop_{it}, which is the number of adult (18+) residents of a county, both native and foreign-born; the low-skilled immigrants L_{it}, which is the number of adult foreign-born residents with no high-school degree; and the high-skilled immigrants H_{it}, which is the number of adult foreign-born residents with a high-school degree or more.

Data on natives and on low-skilled and high-skilled immigrants for the years 1980, 1990, 2000 and 2010 are obtained combining U.S. Census data from the Census website and 5% U.S. Census data from the IPUMS (Integrated Public Use Micro Samples) website (Ruggles et al. (2004)). Specifically, the share of low-skilled immigrants is calculated as $\frac{L_{it}}{Pop_{it}} = \frac{L_{zt}}{M_{zt}}\frac{M_{it}}{Pop_{it}}$, where (L_{zt}/M_{zt}) is the share of low-skilled adult immigrants in commuting zone z at time t and (M_{it}/Pop_{it}) is the immigrant share in the total adult population of county i at time t. Only the total immigrant population figures are available at the county level from the Census. For this reason we calculate the county-level low-skilled and high-skilled shares by applying the ratios constructed at the commuting-zone level.[7]

[7] To alleviate the concerns of measurement-error bias, we want to stress that, in the construction of our instruments, we rely on county-level information and not on information at the commuting-zone level.

The election data are from the Congressional Quarterly data set and include presidential and congressional (House and Senate) elections from 1990 to the present. Our main outcome variable is the share of votes going to the candidate affiliated with the Republican Party:

$$r_{it} = \frac{Republican\ Votes_{it}}{Votes_{it}} \tag{5}$$

$Republican\ Votes_{it}$ represents the number of people who voted for the Republican Party, whereas $Votes_{it}$ is the number of actual votes in county i and year t. Since elections do not necessarily coincide with the year the Census was taken, we average the Republican vote share over the elections that coincide with the decennial Census years and elections two years past the Census, i.e. the elections that took place in 1990/1992, 2000/2002 and 2010/2012 (with the exception of the House elections, for which we have only data from 1992 onward). We consider 1990, 2000 and 2010 as the years of analysis and we use the Census 1980 to construct our shift-share instruments, as we will describe below.

4.1 Descriptive Statistics and Simple Correlations

After matching the election data with the Census data at the county-year-election type level, the final sample contains 27,738 county-year-election observations across the three types of elections (House, Senate and presidential), and each of which has 9,246 observations.[8] Table 1 contains the summary statistics of the share of Republican and Democratic votes across each type of election, in the upper part of the table. Summary statistics for the key explanatory variables and for the other population data, including the control variables that will be used in the empirical analysis, are reported in the lower part of the table. The simple average – across all counties, elections and years (1990, 2000 and 2010) – reported in Table 1 shows that the Republican Party obtained 53.5% of the county vote and the Democratic party 42.5%. The lower average percentage of the Democratic vote in Table 1 is an artifact of the simple average, since Democrats and third-party candidates are over-represented in more urban and densely populated areas.[9] It is more relevant to consider the change in the share of the vote to the Republican Party that occurred between 1990 and 2010, the period of our analysis. Figure 1 shows the map of U.S. counties and the range of variation in the change of intensity of the Republican vote between 1990 and 2010 (measured by the change in Republican vote share). Darker shades of gray indicate an increase of the Republican share, while lighter shades and white indicate a decrease in the Republican share. Three interesting facts emerge from this map. First, non-urban counties in the South and Mountain states have moved towards a larger share of the Republican vote.

[8] Due to data limitations for some control variables (trade and employment), counties in Alaska and Hawaii are not included. The results presented below are robust when we exclude these control variables and at the same time include counties in Alaska and Hawaii.

[9] The average weighted by voting population is much closer for the two parties.

This is particularly apparent in Northern Texas, Oklahoma, Louisiana, Arkansas and Kentucky. Second, urban counties in coastal locations of California, New England, Florida and near the Great Lakes have moved towards a larger share of the Democratic vote. Finally, some states have moved in one direction or another more than the rest of the nation. For instance, New Mexico and Colorado have moved towards the Democrats while Kansas and Oklahoma have moved towards the Republicans.

The overall share of immigrants in the adult population has also changed significantly in the considered period, with very large differences across counties. The map in Figure 2 represents (darker color indicating greater intensity) changes in immigrants as a share of the adult population, between 1990 and 2010 in all Continental U.S. counties. While some traditional immigrant locations such as California, Illinois (mainly Chicago), Florida and New England continued to attract immigrants and increase their share in the local population, new destinations emerged as magnets, especially in New Mexico, Colorado, Kansas, Nevada and Washington State. Also interesting is to consider the maps of the change in low-skilled and high-skilled immigrants, which are reported in Figure 3, Panels (a) and (b). While the traditional states of immigration (California, Florida, Texas, Illinois) still had growth of low-skilled immigrants (light gray color in Panel (a)), they seem to have experienced an even larger inflow of high-skilled immigrants in the two decades considered (dark gray in Panel (b)). Interestingly, the border counties with Mexico seem to have experienced a decline in the share of low-skilled immigrants, likely as a result of enforcement and return migration, especially in the last 10 years of this period.

Even a cursory glance at the maps in Figures 1 and 2 suggests a negative correlation between the increase in total immigrants as a share of population and the share of Republican vote. This is suggested by the fact that urban coastal areas, with larger positive changes in the share of immigrants, also experienced a decrease in the Republican vote share. To visualize this correlation better, we show in Figure 4 the scatter plots relating the changes in immigrant shares and changes in the Republican vote weighted by the voting age population, between 1990 and 2010. The correlation is negative and significant with a regression slope of -0.92 and a standard error of 0.03. Counties where immigrants increased by one percent of the adult population experienced, on average, a decrease of the Republican vote share by 0.92 percentage points.

This aggregate correlation, however, hides two very different components, which are separated in Panels (a) and (b) of Figure 5. Panel (a) shows the correlation between changes in the low-skilled immigrant share and changes in the Republican vote share and panel (b) shows the correlation between changes in the high-skilled immigrant share and changes in the Republican vote share across countries. While the first is positive and significant (with a coefficient of 0.29 and a standard error of 0.10), the second is negative and significant (with a coefficient of -1.3 with standard error of 0.03). It appears that the inflows of more- or less-educated immigrants are correlated with very different shifts. If most of the effects are driven by changes in citizens' voting preferences, and part of the correlation is causal, these scatter plots suggest that citizens may react to unskilled immigrants by moving to the party that promises less

immigration (and less redistribution). At the same time, the vote response to highly educated immigrant inflows more than offsets this response, pushing them toward voting Democrat, the party that stands for more immigration and more redistribution. In net, the correlation of immigration and the Republican vote in the average U.S. county is negative, because in the 1990-2010 period the inflow of high-skilled immigrants has been larger than the inflow of less-skilled immigrants (see averages in Table 1). Some of our results below also suggest that the pro-Democrat response to high-skilled immigrants is stronger than the pro-Republican response to low-skilled immigrants.

Finally, Table 1 also shows the summary statistics of the control variables included in the main empirical specifications. In choosing economic and demographic controls, we follow the existing literature on the determinants of voting behavior in the United States, in particular Della Vigna and Kaplan (2007), and include the share of low-skilled natives in the adult population, the share of African-Americans and Hispanics, the unemployment rate, the share of the population living in urban areas, as well as the share of males and the average income per person (see lower panel of Table 1). As these detailed demographic data are not available at the county level on the Census website, we use the 5 per cent Census sample from the IPUMS website to compute these shares at the commuting zone level and we apply those to all counties in the commuting zone.

In addition to the variables described above, we also control for the possible trade impact in the county – as trade may have an impact on votes (Che et al. (2016)) and may affect wages and employment (Autor et al. (2013)). More specifically, we include the national industry-specific growth rate of manufacturing imports between 1990 and year t, weighted by the commuting zone's employment composition across sectors in manufacturing in the year 1990 (as in Autor et al. (2013)). We also control for a "Bartik" indicator that proxies for sector-specific labor demand shocks in a given commuting zone. We constructed it by taking a weighted average of the national industry-specific growth rate of employment between 1990 and year t, using as weights the employment shares across industries of the commuting zone in the year 1990.[10] This is an indicator of how technological forces have affected productivity and labor demand in the long run.

5 Identification

The estimation of equation (3) with least squares (LS) risks producing biased estimates if there are unobservable local characteristics affecting the vote of citizens (captured in the term ε_{it}) that are correlated with the change in high- and low-skilled immigrants as a share of the population. If immigrants are attracted to locations where the attitudes of citizens are becoming more favorable to immigration, and these attitudes are correlated with the change in the local vote, then a spurious correlation between the inflow of new immigrants and the change in Republican votes may ensue. Moreover, economic and demographic changes that attract new immigrants and push local votes towards a

[10] This follows Bartik (1992).

specific party will also induce bias. In order to avoid or at least reduce these sources of omitted variable bias, we use two instrumental variables to capture the variation in more- and less-educated immigrants that should have little correlation with other local economic or political determinants of the vote. They are an extension of the shift-share instruments typically used in the migration literature.

5.1 Instrumental Variables

Our IV approach consists of identifying sources of variation for the change in more- and less-educated immigrants, ΔH_{it} and ΔL_{it}, in county i between decade $t-10$ and t, which are uncorrelated with local political and economic factors that affect the local vote. Since we are considering two distinct populations of immigrants, the IV variation of the groups needs to be sufficiently differentiated to identify two separate effects. To do so, we leverage the different timing and sizes of the inflow of high-skilled and low-skilled immigrants across national groups, interacted with the 1980 distribution of immigrants by country of origin across U.S. counties. Our two instruments build on the shift-share methodology, widely used in this literature (since Altonji and Card (1991) and Card (2001)), which we adjust in order to make it skill-specific. First, let us define the terms $sh_{US,i,1980}$ and $sh_{c,i,1980}$ as the U.S.-born adults and adult immigrants from country c, respectively, living in county i in 1980, as a share of their total adult population (age 18 and older) in the U.S. in 1980,[11] namely:

$$sh_{US,i,1980} = \frac{N_{i,1980}}{\sum_i N_{i,1980}} \tag{6}$$

and

$$sh_{c,i,1980} = \frac{M_{c,i,1980}}{\sum_i M_{c,i,1980}} \tag{7}$$

The predicted size of the population of county i is given by the sum of the predicted number of immigrants and the predicted number of natives in county i ($\widehat{Pop_{it}} = \widehat{M_{it}} + \widehat{N_{it}}$). Each term in the latter sum uses imputed population changes, which are obtained by multiplying aggregate changes of the population (of natives or of immigrants by country of origin) by the 1980 shares of that population across counties. In particular, the imputed native (N) and immigrant (M) population changes in county i are given by the following two equations:

$$\triangle \widehat{M_{it}} = \sum_c sh_{c,i,80} \left(M_{ct} - M_{ct-10}\right) \quad \text{and} \quad \triangle \widehat{N_{it}} = sh_{US,i,80} \left(N_t - N_{t-10}\right)$$

and these changes are then added to the initial distribution in 1980 to obtain the

[11] We aggregate the countries of origin of immigrants into 14 origin-country groups, (Mexico, Canada, Rest of Americas, Western Europe, Eastern Europe, China, Japan, Korea, Philippines, India, Rest of Asia, Africa, Oceania, Others), thus the index c in $sh_{c,i,1980}$ varies across these groups.

imputed 1990 immigrant and native population in county i:

$$\widehat{M}_{i1990} = M_{i1980} + \triangle\widehat{M}_{i1990} \quad \text{and} \quad \widehat{N}_{i1990} = N_{i1980} + \triangle\widehat{N}_{i1990}$$

We iterate the process to obtain the imputed populations for the years after 1990:

$$\widehat{M}_{it} = \widehat{M}_{it-10} + \triangle\widehat{M}_{it} \quad \text{and} \quad \widehat{N}_{it} = \widehat{N}_{it-10} + \triangle\widehat{N}_{it}$$

The imputed total population is then simply the sum of the two ($\widehat{Pop_{it}} = \widehat{M_{it}} + \widehat{N_{it}}$).

Next, we calculate the imputed number of skilled and unskilled immigrants, using the same 1980 share across counties by country of origin, $sh_{c,i,1980}$, and distributing the total number of high-skilled and low-skilled foreign-born immigrants from each country of origin c at time t in the U.S. (H_{ct} and L_{ct}, respectively) proportionally to those shares.[12] Thus, the predicted number of skilled immigrants in county i is given by

$$\widehat{H}_{it} = \sum_c sh_{c,i,80} H_{ct}$$

and similarly, the imputed number of skilled immigrants is given by:

$$\widehat{L}_{it} = \sum_c sh_{c,i,80} L_{ct}$$

The instrument for the share of skilled immigrants in county i is then simply the predicted number of high-skilled immigrants divided by the predicted population $\left(\widehat{H}_{it}/\widehat{Pop_{it}}\right)$, and for the low-skilled immigrants it is $\left(\widehat{L}_{it}/\widehat{Pop_{it}}\right)$. We will use the instruments to predict the share of skilled and unskilled immigrants in regression (3) and (4). We note that the ability of the two instruments to proxy high- and low-skilled immigrants depends only on the difference in skill intensity of immigrant groups, interacted with their 1980 location by country of origin. Counties with similar shares of immigrants as of 1980, but from different origins, generated very different imputed changes of high- and low-skilled, due to the interaction of those shares with the educational composition of immigrants by nationality.

5.2 Discussion

The shift-share instrument has been widely used in immigration economics and it is convenient.[13] It usually has reasonable power, because networks of existing immigrants attract new immigrants from the same country, and its exclusion restriction is plausible. It is based on assuming that the distribution of immigrants by country of origin,

[12] One advantage of this method is to avoid aggregation issues due to the use of commuting zone level data for the skill level.

[13] See a review of its use and refinements in Lewis and Peri (2015).

10 years before the period of analysis, in 1980, is not correlated with economic and demographic changes for the native population, after 1990, other than via their impact on current immigration. While persistent local conditions that attract immigrants and affect political votes can threaten the identification, one can test the plausibility of the assumptions and reduce the omitted variable concerns. We will discuss some of them here.

The first threat to identifying a causal connection from immigration to votes consists of the possible reverse causation combined with persistence and correlation over time. If places that are more likely to vote for the Republican Party also attract/push away low-skilled (or high-skilled) immigrants and correlation over time is strong, this channel can bias the estimates. One falsification exercise we perform to address this issue is to regress the change in the subsequent share of low-skilled and high-skilled immigrants, respectively, on past vote share, to show that there is no significant correlation.

The second threat is that some counties have persistent economic, cultural and institutional features appealing to immigrants and also affecting their political preferences. Location, geography and historical heritage of a county could be such factors. The introduction of county fixed effects and of economic and demographic controls at the commuting zone level contributes to reducing these concerns, but may not eliminate all of them.

Finally, as we estimate a reduced form and not a structural relation, it is important to enrich our understanding of the average effect with the potential interaction of immigrants with different local features. The fact that we allow the effects to be heterogeneous across counties, depending on their initial characteristics, improves our identification as well, in that it shows which local characteristics strengthen or weaken a certain effect. This lends support to different hypotheses and channels, and may rule out others. In addition, when the estimated effects are heterogeneous, it is much harder to formulate an alternative interpretation of the results based on endogeneity. Hence, we will implement the two-stage least squares (2SLS) estimates, and we will also try to produce OLS estimates that reduce the worries of omitted variable bias. First we will analyze some basic OLS regressions that allow us to choose a parsimonious specification and focus on the most relevant partial correlations.

6 OLS and 2SLS Estimates

6.1 Basic OLS Estimates

Table 2, Panel (b) shows the estimates of coefficients β_L and β_H from equation 3 when we use LS and include time effects, county effects and the commuting-zone specific controls as described above (i.e. the share of low-skilled natives, the share of men, the share of African-Americans, the share of Hispanics, the share of unemployed, the average income per person in the adult population as well as the Bartik employment shifter and the Import competition shock). These variables capture a wide range of

economic and demographic characteristics of the commuting zone that may affect the vote percentages, measured at the beginning of the decade. Specifically, the Bartik shifter captures the sector-driven employment growth at the local level, and the Autor et al. (2013) "trade shock" captures the impact of import competition from China and other countries on the local manufacturing sectors. In Panel (a) of Table 2 we show, for comparison, the coefficient estimates for the specifications that use the aggregate share of immigrants as an explanatory variable.

These specifications are reminiscent of the reduced-form regressions that are often used to analyze the local impact of immigrants on labor market and other economic outcomes (e.g. Card (2001), Basso and Peri (2016)). They provide *prima facie* evidence of the correlation between the increase in foreign-born residents in a county, and then separately of more- and less-educated foreign-born residents, and the change in the share of Republican votes.

In specification (1) we include all types of elections pooled, while in specifications (2)-(4) we include separately presidential, Senate and House elections. The standard errors are clustered at the commuting zone level to account for potential correlation of errors within each commuting zone – given that a commuting zone encompasses a labor market.

Three clear facts emerge from Table 2. First, there is a significant and robust positive correlation between the share of low-skilled immigrants and the Republican vote share across counties, when pooling all elections as well as for each election type separately. Second, there is a similarly robust and significant negative correlation between the share of high-skilled immigrants and the vote share of the Republican Party in the pooled election specification and in each election type. Third, although the coefficients are of similar magnitude and opposite sign, when combining the two effects, in Panel (a), we are left with a negative and significant coefficient. The reason is the larger increase in high-skilled immigrants relative to low-skilled immigrants as a percentage of the population in the 1990-2010 period. Counties in which less-skilled immigrants in the adult population increased by 1 percentage point are also those where the share of the Republican Party increased on average by 0.87 points. Conversely, a similar increase in high-skilled immigrants reduced the Republican share by 0.75 percent.

These correlations may be driven by many different factors and channels. First, it may be that, rather than the level of skills of immigrants, which is certainly the most relevant variable in determining their economic and labor market effect, it is the origin of the immigrants that produces the voting response. Immigrants from poor countries, no matter what their skill level is, may be perceived as being different and imposing a cost, and hence the level of skill may just be proxying for immigrants coming from rich and poor countries. In Table 3, column 2, we show the correlation after we have split immigrants in four groups to estimate a separate coefficient on low-skilled from poor countries, low-skilled from rich countries, high-skilled from poor countries and high-skilled from rich countries. The set of rich countries are those in the OECD. Interestingly, the coefficient on high-skilled immigrants is negative and significant (both for rich and poor countries of origin) and the coefficient on low-skilled immigrants is

positive and especially large for immigrants from OECD countries.

It appears that low-skilled and high-skilled immigrants have a significantly different association with the Republican vote, independent of whether they are from rich or poor countries. The "pro-Democrat" impact of high-skilled immigrants, even for those from poor countries, is consistent with a theory based on the economic and fiscal effect of immigrants (and the positive contribution of high- relative to low-skilled immigrants), rather than with a theory based on ethnicity or country of origin. To check if a specific country of origin is associated with the pro-Republican vote share, in column 3 we isolate the share of Mexican immigrants. They are the largest group of immigrants in the U.S. and are often associated with undocumented immigration or low-skilled immigration. Even in this case, there is a large positive association between the share of less-skilled Mexicans with Republican votes, and there is a large and negative association between the share of highly educated Mexicans with the Republican vote. Thus it appears that the vote across counties is quite responsive to the skills of immigrants, rather than to their nationality.

Finally, in column 4 of Table 3 we analyze whether there is evidence that the share of immigrants affects the share of Republican votes as a consequence of their direct voting behavior when they naturalize and become citizens, rather than their impact on natives. In this column we separate the share of immigrants between naturalized (citizens) – hence able to vote – and non-naturalized (non-voting). The coefficient on non-naturalized immigrants, no matter through what mechanism, can operate only via their effect on citizens' votes, as non-naturalized immigrants cannot vote. Hence, if non-naturalized immigrants have a correlation with the vote share that is similar to that of naturalized immigrants, this must imply that the indirect effect is the predominant channel through which immigrants as a whole affect U.S. votes. The point estimates of column 4 of Table 3 show that the correlation of low-skilled immigrants with the Republican vote share is similar between citizens and non-citizens (not statistically different) and positive, while in the case of high-skilled citizens, the coefficient is actually larger in value (and negative) for non-citizen immigrants than for citizen immigrants. These coefficients together suggest that the impact of immigrants is mainly through their effect on existing voters' preferences and votes (their indirect effect) and not through their direct impact, i.e. through the new votes, participation and different voting behavior of newly naturalized immigrants.

An alternative way to check whether immigrants affected the participation at the elections and hence may have had a role in modifying the composition of voters (rather than their vote choice) is to see whether there is a significant correlation between immigration and the electoral turnout across U.S. counties.[14] These coefficients are shown in Table 4, first for the total immigrant share and then for high- and less-skilled immigrants separately. The estimated specification is just as (3), but the dependent variable is now the total number of votes divided by the number of people who have

[14]We define voter turnout as the total number of votes in the election data divided by the voting population observed in the U.S. decennial Census. For the House elections, we observe only vote shares for each party and hence are not able to compute the turnout.

the right to vote. The table shows a negative coefficient between immigrants and vote turnout when controlling for local characteristics (column 2) but no significant coefficient when separating more- and less-skilled immigrants (column 4). This suggests that the participation channel is likely not too relevant and that the main effect of immigration comes through the impact on existing voters' votes, and it is different in response to more- and less-skilled inflows.

Let us emphasize that while all the estimated coefficients may suffer from omitted variable bias, this preliminary analysis has provided us with some important correlations that we will further analyze using the 2SLS estimation. As the partition between more- and less-skilled has proved to be crucial, our 2SLS outcomes will focus on that. As the correlation has proven to be the same for non-naturalized as well as for naturalized immigrants, we consider the plausible channel for the correlation to be through the votes of existing voters, i.e. an indirect effect.

6.2 Basic 2SLS Estimates

Table 5 shows the estimates using 2SLS, with imputed high- and low-skilled immigrants as instruments. In columns 1, 2, 4 and 5 we include separately low- and high-skilled immigrant changes as a share of the population. In specifications 3 and 6 we include both changes simultaneously. In the lower part of the table we show the coefficients for the first stage without commuting zone controls (specifications 1-3) and with those controls (specifications 4-6). All specifications include all elections and control for time, county and election fixed effects. The first thing to notice is that the F-statistics of the first stage are reasonably large. The weaker instrument is the one predicting the change in less-skilled immigrants, but its power and the joint power of the two instruments are still strong, as the F-statistics are larger than 10 in the specification with county fixed effects. Focusing on the most conservative specification 6, which includes the commuting zone level controls and simultaneously estimates the effects of the two groups, we see that the estimated coefficients are not too different from the OLS coefficients in column 1 of Table 2, Panel (b). An increase in low-skilled immigrants of one percent of the adult population produces an increase in the Republican vote of 1.3 percent. The same increase of high-skilled immigrants produces a decline in the Republican share by 0.78 percent. The first effect is larger than the OLS estimate (0.87), but the standard error is large so the two are not significantly different. The second effect is very similar in the two estimates. These estimates are consistent with a causal interpretation of the significant and opposite effects of high- and low-skilled immigrants on the vote share. A large inflow of less-educated immigrants, possibly increasing worries about labor market competition (for low-skilled citizens) and fiscal transfers (for both high-skilled and low-skilled citizens) seems to push the electorate towards a vote for the Republican Party. Recall that our set of controls – for sector-driven employment growth and for trade shocks – is meant to separate out generic economic shocks from the impact of the inflow of immigrants.

To rule out that reverse causation plus persistence of political preferences could be

a strong driver of the correlation, we test in Panel (a) of Table 6 whether the share of Republican votes in an election is associated with the change in immigrants (high- and low-skilled) *during the following decade*. In Panel (b) we perform the same test for the *predicted* share of immigrants (high- and low-skilled) as defined by our instrumental variable strategy. A correlation of the political environment with subsequent inflows may reveal that locations with more Republican voters represent a worse environment for low-skilled immigrants (or a better one for skilled immigrants) affecting subsequent inflows and generating a correlation with subsequent vote change that may be due to reverse causation. While some correlation exists when we do not include commuting zone control variables or county fixed effects (see Table 6), there is no systematic correlation between the past Republican vote share and the subsequent decade change in the immigrant share or in the predicted share of high- or low-skill immigrants. While immigrants certainly do not locate themselves randomly, the past vote share of the Republican party does not seem to have predictive power in determining their location. The similarity of OLS and 2SLS results, plus the test of reverse causality of Table 6, help reassure us that our regressions do not show strong evidence of large omitted variable bias or reverse causality bias, especially once we control for county fixed effects and local economic factors. In the next section we will therefore rely on the OLS and 2SLS identification with many fixed effects to inquire after the heterogeneous response of counties, depending on their economic and demographic make-up.

7 Heterogeneous Effects and Potential Explanations

Equation 4 shows that the electoral response of the median voter in county i may depend on the average characteristics of that county, k_i. This would be consistent with the economic and political theories of voting. The perception of low-skilled immigrants by less-educated natives may be negative, as those migrants may compete with them in the labor market and may crowd out public resources that benefit them in particular. Highly educated natives, instead, may value the variety of skills and services that they bring – as low-skilled immigrants complement their skills – but still be concerned about the fiscal impact of low-skilled immigrants. Hence, the effect of an inflow of low-skilled immigrants on a vote against immigration (for the Republican Party) should be stronger the larger the share of less-skilled citizens in the county (and hence the more unskilled the median voter). In this section we analyze the operation of this and other channels in determining heterogeneous voting responses across U.S. counties.

7.1 The Labor-market Channel

Economic theory of labor market competition suggests that immigrants would be beneficial to the wage and employment of complementary types of workers and would reduce the relative demand for similar types of workers (e.g. Ottaviano and Peri (2012)). Even in the presence of positive overall effects from immigrants, workers with mostly com-

plementary skills will perceive the strongest positive effect from a group of immigrants. Hence, we consider the ratio of unskilled to skilled in the local population, before migration, as a key determinant of the attitude of citizens towards low-skilled and high-skilled immigrants. The variable k_i in this case will be the ratio of less-skilled to high-skilled adult population in 1980, where we define as skilled people those with more than a high-school degree and unskilled as those with at most a high-school degree. We include only people older than 18 and we standardize the value to be equal to 1 in the county with the highest ratio, so that the county with smallest ratio has a value of 0.05. The theory of relative skill supply (as in Autor et al. (2006)) predicts that the average worker in counties with large values of low-to-high skill ratio will be subject to wage competition from low-skilled immigrants. Hence, in those counties, an increase in the share of low-skilled immigrants should shift citizens' votes towards Republicans ($\beta^1_L > 0$ in regression 4) because of the feared negative wage effects. To the contrary, the average voter in counties with small values of the unskilled-to-skilled ratio is likely to benefit from low-skilled immigration through skill complementarity. In those counties the vote should move towards the (pro-immigration) Democratic Party as the inflow of low-skilled immigrants produces benefits to the median voter. If based on labor market competition, the vote impact on the Republican Party of high-skilled immigrants should be the opposite. That is, counties with low values of the low-to-high skill ratio should have a more pro-Republican response to high-skilled immigrants relative to counties with high values of low-to-high skill ratio.

Column 1 of Tables 7 and 8 shows the estimates of the key coefficients in specification (4) when the interacted variable is the ratio of unskilled-to-skilled workers in 1980.[15] The method of estimation is OLS for Table 7 and 2SLS for Table 8. The instruments used for the share of low-skilled and high-skilled immigrants are the imputed shares described above. We also instrument the interaction of the predetermined characteristic with the share of immigrants with the interaction of the characteristics and the *imputed* share of immigrants. The results are similar between the two methods qualitatively, but the 2SLS interaction coefficients are much larger in absolute value and imprecisely estimated, due to the low power of the instrument once we interact them with the indicator of skills. Hence we focus on the OLS coefficient in our quantitative assessment.

The estimates of column 1 of Table 7 imply that in the county with largest unskilled-skilled ratio (standardized to be equal to 1), an increase of the low-skilled immigrant group by one percent of the population *increases* the share of Republican votes by 3.22 percentage points (0.22 + 3.0). To the contrary, in the county with the smallest share of unskilled-skilled ratio (equal to 0.02), the growth in the low-skilled immigrant population produces a much smaller *increase* in the Republican vote equal to (0.22 + $0.02 * 3.00 =$) 0.28 percentage point. The first effect is significantly different from 0 at the 5% confidence level, while the second is not statistically significant. This suggests a

[15]While the share of immigrants is measured at the county level, the "interaction variables", such as the unskilled/skilled ratio and the share of the urban population, are measured for the commuting zone. This is due to data availability for these variables at the commuting zone level and to the commonality of economic conditions in the commuting zone.

very heterogeneous response to the same phenomenon. Counties with a predominantly low-skilled population respond to immigration with a much larger shift of votes towards the Republican Party, relative to counties with a predominantly high-skilled population, which do not have a significant response. This can be considered as one expression of "polarization" of American politics. Interestingly, and consistently with an economic explanation of the impact of immigrants, the response to an increase in high-skilled immigration is symmetric, not just in the main effect but also in its interaction. In the county with the largest ratio of unskilled-to-skilled people in 1980, an increase in high-skilled immigrants of 1 percent of the population would produce a decrease in the Republican vote by -2.75 percentage points ($=-0.29*2.46$). However, the same increase in the most skilled county would result in a shift by only -0.34 percentage points ($=0.02*2.4$). In this case, the move away from the Republican vote is significant also for the most skill-intensive county. If a county is more skilled, the pro-Republican effect of less-skilled immigrants is reduced because that group does not harm labor market perspectives, but the pro-Democrat effect of skilled immigrants is also reduced. These effects are consistent with a world where there is an overall preference for high-skilled immigrants, possibly because of their positive fiscal effect, and an aversion of citizens for immigrants with skills similar to theirs (and preference for immigrants of different skills). A model of skill complementarity plus some redistribution would imply that such voting behavior is economically rational.

To give a concrete example of how the heterogeneous responses affect the voting outcomes, we compare two counties that had a rather large increase in their immigration shares over the last 20 years. The first is Gwinnet County in Georgia, which saw its share of immigrants increase by 26 percentage points over 20 years. Immigration was mainly high-skilled (two-thirds of immigrants were high-skilled). In addition, the native population in 1980 was rather skilled. The county is part of a commuting zone that ranks at the 26th percentile of the unskilled-to-skilled distribution of natives in 1980.[16] According to the coefficients in Table 7, column 1, the implied decrease in the Republican vote share is 10.2 percentage points. A county with a similarly large increase in the share of immigrants was Concho County in Texas. The share of immigrants increased by 16 percentage points but was predominantly low-skilled (63 percent of them were low-skilled). Furthermore, the county is part of a commuting zone with a rather high share of unskilled natives. The commuting zone was at the 70th percentile of the unskilled-to-skilled distribution of natives in 1980. The combination of having a large inflow of unskilled immigrants and a native population characterized by a high share of low-skilled natives implies, according to our model in Table 7, column 1, an increase in the Republican vote share of 10.6 percentage points. Overall, this example illustrates how a significant increase in the share of immigrants can lead to very different election outcomes depending both on the composition of immigrants and on their interaction with native characteristics. We can say that counties such as Gwinnet and Concho diverged in their political preferences also as a consequence of their response

[16]The first percentile being the commuting zone with the highest skilled-to-unskilled ratio.

to immigration.

A second local characteristic that may affect the labor market impact of immigrants on natives is the skill diversification and "thickness" of the local economy. Immigrants may have differentiated skills relative to natives (see Ottaviano and Peri (2006)) and they increase the variety of abilities available to firms. Their positive impact may be larger where the number and variety of firms is larger and where the demand for skills is more differentiated. Also, higher density of economic activity may imply a better skill-to-task match for immigrants (see Peri and Sparber (2009)). This would produce stronger and more positive productivity effects. We proxy the differentiation and complexity of the local economy simply with the density of economic activity. We consider the share of the county that is rural (i.e. non-urban) in 1980 as k_i and we summarize the economic theory of local agglomerations as implying lower benefits from (low-skilled and high-skilled) immigration for larger values of k_i. We also standardize this variable to have a maximum value of 1 and a minimum of 0.

Column 2 of Tables 7 and 8 shows the estimates of the relevant coefficients, interacting county rural share in 1980 with the change of each type of immigrant. Using the OLS estimates, which are smaller and more precise, we obtain that the county with the most rural population (index equal to 1) experiences an increase of Republican vote share of $(0.47 + 1.41 =)$ 1.88 percent per increase of low-skilled immigrants of 1 percentage point of the population. A county with a fully urban population, instead, experiences an increase of only 0.47 percent of the Republican vote as low-skilled immigrants increase by 1 percent of population. That same county also experiences a decline of 0.68 percent in the Republican vote share for a similar increase in high-skilled immigrants. High-skilled immigrants may have had a stronger pro-Democrat effect in rural counties but that gradient (estimated at -0.513) as the rural percentage increases is not significant.

Less-urbanized and low-skilled counties, therefore, are those where a larger increase in low-skilled immigrants triggered a move towards the more "restrictive" Republican Party. To the contrary, in urban highly skilled counties a larger inflow of immigrants, especially if balanced or skill-intensive, triggered the opposite effect of an increase in the share of votes for the Democratic Party. This result broadly aligns with the economic interests of the median voter in each county. Skilled urban workers see the benefits of opening their economy to immigrants, who increase the local supply of complementary abilities, increase the variety of local skills, and bring them positive productivity effects. Not only do urban highly skilled workers have different voting patterns than less-skilled non-urban workers, but the same phenomenon – an increase in the share of non-citizen immigrants – produces divergent political responses.

7.2 Fiscal Redistribution

Often immigrants, especially less-skilled ones, are perceived as a burden on the social state. Several advocacy groups produce documents suggesting that, overall, immigrants are a fiscal cost. Academic studies are much less clear that there is a negative fiscal

effect of immigrants, as the fiscal accounting of immigrant effects is complex and depends on a series of assumptions (see, for instance, the range of possible calculations presented in Chapter 8 and 9 of NASEM (2016)). However, there is some consensus among academics that less-educated immigrants may constitute a net fiscal cost for natives, while more educated ones constitute a net positive transfer. Depending on whether people think that the fiscal cost of less-educated immigrants will imply mainly higher taxes (predominately paid by higher-skilled) or less welfare and transfer benefits (predominately received by less-educated), this fiscal effect may produce larger opposition among more- or less-educated citizens. Highly educated immigrants instead should be considered as bringing net benefits to both groups of citizens.

To see if the local generosity of the welfare state affects the intensity of the anti-low-skilled immigrant response, we analyze in column 3 of Tables 7 and 8 the interaction of local public spending per dollar of income and immigration. As the generosity of public spending increases, inflow of less-skilled immigrants may result in more opposition to it and more votes for the Republican Party.[17]

The estimates suggest that, even in this case, counties with larger public spending per dollar of income respond with a stronger pro-Republican vote to less-skilled immigration. The response to high-skilled immigrants, on the other hand, is opposite in sign but not statistically significant. The generosity of local public spending seems to have less of an interaction effect with immigration in determining the move towards a lower share of Republican vote.

Combining the evidence provided so far, we have a picture of the perceived economic impact of immigration, and of the subsequent effect on citizens' votes, that is also consistent with the evidence from the literature on individual attitudes towards immigrants (see Scheve and Slaughter (2001), Hanson et al. (2007), Mayda (2006), and Facchini and Mayda (2009)). In particular, areas with more unskilled populations, lower urban density and higher public expenditures per unit of GDP seem to respond to low-skilled immigrants with a larger share of votes to the Republican Party. On the other hand, high-skilled immigration consistently moves the local electorate towards votes for the Democratic Party; this effect is particularly strong in areas with large concentrations of low-skilled workers but it is present in all counties.

7.3 Linguistic Differences

A third channel that we test in our heterogeneous-effects specification entails the linguistic difference between immigrants and natives. We take the linguistic distance of an immigrant community's language, defined as the official language spoken in the country of birth of that group, and we calculate the linguistic proximity index based on an Ethnolinguistic Tree, as described in Adsera and Pytlikova (2015). We consider the

[17] In our main specification we define public spending as the share of total public education expenditure per GDP in the commuting zone. Alternative measures for public spending include total expenditure for schools and hospitals per total GDP. In both cases, the results are similar to the one presented in the main text.

linguistic proximity index i_{ci1980} in commuting zone i that ranges from 0 to 1 depending on how many levels of the linguistic family tree the languages of the immigrant's country of origin c share with English. We weight the index by the share of immigrants from country c in the immigrant population in the commuting zone w_{ct1980} as of 1980

$$I_{i1980} = \sum_{c=1}^{M_i} w_{ct1980} i_{ct1980} \tag{8}$$

and use the linguistic proximity index I_{i1980} that varies between 0 (all immigrants in the commuting zone migrated from a country with English as an official language) and 1 (no immigrant in the commuting zone migrated from a country with English as an official language) in each commuting zone. We transform this index into a distance measure (by taking one minus the proximity index), which also varies between 0 and 1. This distance, measured as of 1980, may be considered as an attribute of the local immigrant group. It is interpreted as the average linguistic distance between the native and the immigrant populations. As long as language commonality reflects similar values, a shared history or common cultural references, this index also proxies for average cultural distance.

The estimates of the coefficients on this interaction are shown in column 4 of Tables 7 and 8, using OLS or 2SLS. The linear coefficient of high-skilled immigrants and the interaction term with linguistic distance is negative and significant in both the OLS and the IV estimates. These results imply that the pro-Democrat effect of highly skilled immigrants increases when the immigrants are from countries that are further linguistically. For the low-skilled, the combined effect has the reverse implications. In the 2SLS specifications culturally homogeneous counties have no significant preference for either party, but as immigrants are further away linguistically, low-skilled voters shift their voting preference significantly to the Republican Party. When taken together, these results can be considered as suggestive evidence that cultural distance between the local immigrant community and natives tends to increase the anti-immigration sentiment that native people experience for less-educated immigrants. The pro-Democrat reaction to high-skilled immigrants is not as clearly affected by linguistic distance, with distance reinforcing the pro-Democrat effect, if anything.

To illustrate the effects of cultural differences of immigrants on election outcomes, we consider again the counties from before, Gwinnet County in Georgia and Concho County in Texas. Gwinnet County is not only part of a commuting zone with a large share of high-skilled natives but also part of a commuting zone where language differences between immigrants and natives are smaller than for the median commuting zone. On the other hand, immigrant-native language differences in Concho County are very large. The county ranks at the 97th percentile of the distribution. Based on the language differences and the differences in type of immigrants, the election outcomes are as polarized as in the example of the labor market channel. The coefficients in Table 7, column 4 imply a 16 percentage-point decrease in the Republican vote share in Gwinnet County, while in Concho County the Republican vote share would increase

by almost 8 percentage points.

Finally, in the last column of Table 7 (column 5) we include all the channels, captured by the interaction effects, together. The collinearity among them and the large number of endogenous variables implies that the estimates become significantly less precise. More importantly, it is not possible to have a 2SLS estimate due to the joint weakness of the instruments, hence there is no corresponding column in Table 8. The sign and the point estimates for the OLS specification are similar to those estimated one-by-one. The standard errors increase, however, so as to reduce the significance of the estimates. Only the interactions with the share of skilled-to-unskilled ratio of the native population, as well as the interaction with the cultural differences, remain significant. The divergence in the effect of immigrants on votes between counties with a large share of high-skilled natives and those with low share of high-skilled natives is the strongest and most significant divide in political response to the vote. While not too precise, the inclusion of different interactions can improve the aggregate explanatory power of the model. We will use this model to produce some predicted value of changes in Republican share across U.S. counties between 1990 and 2010, simply based on high-skilled and low-skilled immigrant changes. We will also compare them with actual changes in the Republican Party share in the elections and see how much immigration flows may have affected the recent increase in vote polarization and the move towards the Republican Party in some counties.

7.4 Proximity

The last channel we consider is whether proximity to immigrants matters for the vote response of natives. Recent research (such as Steinmayr (2016) for Austria and Mueller et al. (2017) for Switzerland) has shown that proximity to immigrants can reduce anti-immigrant sentiments among the native population. Our reduced-form regressions at the county level cannot separate whether the positive/negative impact of immigrants on native opinion derives from direct contact with them or from news and local information-mediated knowledge. We can, however, analyze whether the effect of immigrants in the same county is different from the effect of immigrants in the state. The second group is as likely to affect the local/state news but less likely to come in direct contact with natives. To do this, we include the share of immigrants in the state (excluding the own county) as an additional control variable. More precisely, we estimate the following alternative specification of equation (4):

$$r_{it} = s_i + q_t + \beta_L \frac{L_{it}}{Pop_{it}} + \beta_L^s \frac{L_{s-i,t}}{Pop_{s-i,t}} + \beta_H \frac{H_{it}}{Pop_{it}} + \beta_H^s \frac{H_{s-i,t}}{Pop_{s-it}} + \beta_x X_{it} + \varepsilon_{it} \qquad (9)$$

where $\frac{L_{s-i,t}}{Pop_{s-i,t}}$ and $\frac{H_{s-i,t}}{Pop_{s-i,t}}$ are the share of low- and high-skilled immigrants at the state level, excluding those in the county. Table 9 shows the results. The share of both low- and high-skilled immigrants at the state level significantly increases the Republican

vote share, while the county-share effect is still positive for low-skilled and negative for high-skilled immigrants. The coefficient of low-skilled immigrants at the state level is larger but not very different from that of high-skilled immigrants in the specification with commuting zone controls. These results can be interpreted as consistent with the idea that more immigrants in a state – likely to catalyze local media attention – produce worries in voters. Personal contact with highly skilled immigrants reverses such worries but personal contact with low-skilled immigrants increases them. Table 9, column 2 shows that, on average, in places where the share of immigrants at the county level is higher than at the state level, natives are less likely to vote for the Republican Party. On the contrary, in cases where the share at county level is lower than at the state level, natives are more likely to vote Republican. The pro-Democrat effect arises from county-level immigration of high-skilled immigrants, as shown in column 4 of Table 9. While these results are mostly suggestive, they indicate that the type of immigrants and their interactions and contact at the local level can be important to understand their electoral impact.

8 Accounting for the 1990-2010 Change in Vote Shares

Figure 1 shows the 1990-2010 evolution of the Republican vote share in U.S. counties. Many counties of the South, Central and Mountain regions of the U.S. display an increase in the average vote share of the Republican Party over the period (dark colors), when averaging elections. The map also shows the tendency of counties in urban New England, several parts of the Midwest, California and few other mainly coastal locations in the West to experience an increase in the share of Democratic Party vote (white color). Is our model, which captures the impact of increased high- and low-skilled immigration and their interactions with local characteristics, helpful to account for this increase in vote polarization and political divide across U.S. counties? With a first and simplistic look, one may observe the coastal and urban increase of the Democratic Party share and be tempted to associate it with the growth of high-skilled immigrants, which offsets a weaker effect of less-skilled immigrants, predominant in the non-coastal regions. Our model, however, is more complex and suggests differentiated effects from low-skilled immigrants across counties. We illustrate our model's predictive power in two steps. First, we calculate the predicted change in the Republican vote share proceeding from the estimated effect of low-skilled immigrants, and then separately the effect of high-skilled immigrants (including all interactions). We then combine the two and test the correlation and explanatory power of these predictions relative to actual changes in the share of Republican vote.

The model estimated in the previous section establishes that the growth of skilled and unskilled immigrants, interacted with local characteristics, was a significant determinant of the change in U.S. voting patterns. In order to use the model for prediction, we consider the OLS estimates in column 5 of Table 7, where we include all the county

characteristics interacted with the change in high- and low-skilled immigrants as a share of the population (unskilled-skilled index, urban share and local public spending index) to predict the change in Republican vote share 1990-2010 in each county. We take from the data the 1990-2010 county-specific changes in population shares of high- and low-skilled immigrants.

Figure 6(a) shows the map of the predicted impact of the growth in the population share of low-skilled immigrants. As most counties experienced an increase in this group's share of the population, when taken by itself, this effect predicts an increase of the Republican share (dark color). This predicted effect is particularly strong for the counties with high shares of low-skilled workers, many of which are in the south. We also differentiate between effects that are significantly positive (shown in the map with a darker color) accounting for the standard error of the estimates. Only some counties in the northern part of the U.S. experienced a decrease in Republican vote through this channel.

Figure 6(b) shows the heterogeneous predicted impact of high-skilled immigrants on the Republican vote. In this case the effect is mainly negative, and particularly so (light-colored counties on the map) for the coastal urbanized area that received large inflows of highly skilled immigrants. The resulting map shows a very large number of negative effects, all over the country, with positive effect on the Republican Party from high-skilled immigrants in only a few counties in the south and central part of the country.

The most relevant Figure is 7. In it we combine the two effects of high-skilled and low-skilled immigrants and we show the net effect on the Republican vote share. The resulting picture reflects the overall impact as quite differentiated across the different parts of the country. More immigrants increased the Democratic vote in the highly dense urban areas of New England and California. Because these locations received a large share of highly educated immigrants and because natives are highly skilled, the vote impact of less-educated immigrants in these areas was attenuated. To the contrary, the growth of immigrants increased the Republican vote share in large parts of the non-urban less-skilled South and Midwest regions, where immigrants were less skilled and the local characteristics made the counties respond more to the immigration of less-skilled people. The electoral reward of winning many counties, rather than the more populous ones (built into the electoral college for the presidential elections) turns out to be an important feature of the effect of immigrants that rewarded the Republican Party.

In order to show how relevant immigration has been in predicting the changing share of Republican votes across counties, we show in Figure 8 a scatter plot of the model-predicted (from Figure 7) and the actual changes in the average vote share (from Figure 1) over the period 1990-2010. We notice a very strong positive correlation: the LS coefficient is 1.48 and the standard error is equal to 0.045. The model prediction of the change in Republican vote explains 22% of the variance of the growth across counties (R-square of the weighted LS regression is 0.22). We also perform a further exercise and evaluate how many counties changed from a majority of Democratic votes

in 1990 to become majority Republican, by adding the predicted change of Republican vote from immigration.

According to the coefficients in Table 7, column 5, in presidential elections only 7 out of 3,082 counties switched from a Democrat majority to a Republican majority. The equivalent number for Senate elections is 2 counties and for House elections is 1 county. On the other hand, 60 counties switched from a Republican majority to a Democrat majority in presidential elections (38 counties switched in Senate elections and 35 in House elections). We can aggregate our results and calculate how many congressional districts and states switched due to immigration. The results show that no state and no congressional district switched from a Democrat majority to a Republican majority as a consequence of immigration. At the same time, in House elections, 11 congressional districts and 5 states in presidential elections switched to a Democrat majority. For Senate elections, our results imply no change in the majority due to immigrants. These results show that immigration did fairly little to change majority outcomes. Rather, it increased political polarization in the United States. Large urban areas, already exhibiting a Democratic majority, are those where the pro-Democrat effect of immigrants was stronger, but those counties were already leaning Democrat before. Similarly, the effect of new immigrants increased the Republican vote share in some less-urban and low-skilled counties that already exhibited a Republican majority in 1990.

9 Conclusion

In this paper we have analyzed the connection between the change in the immigrant population and the vote to the Republican Party, exploiting the variation across U.S. counties between 1990 and 2010. We hypothesize that such a connection can be different in response to high- or low-skilled immigrants.

The first group certainly brings fiscal benefits to natives, possibly increases job creation and growth, and is believed to be easily integrated. The second may have a fiscal cost, may compete in the labor market with less-educated voters, and may have a harder time to integrate. We take no stand on whether these assessments of facts are correct, and in general economists agree that the labor market effects of less-educated immigrants are small (e.g. Ottaviano and Peri (2012)), but we think that they may correspond to the perceptions of U.S. voters.

We also account for the fact that the perception and response of voters (and hence of counties, in that their median voter differs) may be different depending on their characteristics. Less-skilled citizens may perceive the labor market and fiscal competition of less-skilled immigrants, while high-skilled citizens may value their skills and their contributions to the local economy.

We find that an increase in low-skilled immigrants affects the vote of U.S. counties in different ways, but in general tends to push voters towards the Republican Party. Non-urban, low-skill counties with high local public spending strongly increased their

Republican vote share in response to low-skilled immigration. To the contrary, voting patterns in urban, high-skilled counties with low local public spending did not respond much to low-skilled immigration, but did respond to high-skilled immigration by moving towards the Democratic Party.

The differential response to the inflow of more- and less-educated immigrants is consistent with an explanation in which natives prefer high-skilled immigrants, and their response to less-educated immigrants is negative and stronger the less educated the local population. Interestingly, this differential response to immigration is another contributor to the polarization and political divide in the United States. While the most highly educated immigrants (as well as less-educated, though not as many) moved into urban, skill-intensive areas and contributed to moving those already left-leaning areas further towards the Democratic Party, low-skilled immigration (and not much high-skilled immigration) in non-urban and low-skilled areas has contributed to push those areas towards the Republican Party. Our model can explain 22% of the growth in the Republican Party vote share over the 1990-2010 period across U.S. counties, and it shows how the opinion response to immigration is consistent with the local perception of economic costs and benefits from it.

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Tables

Table 1: Summary statistics

		Obs.	Mean	Std. Dev.	Min	Max
Election data	Republican vote share	27,738	53.5	16.1	0.0	100.0
	Democrat vote share	27,738	42.5	16.4	0.0	100.0
House election	Republican vote share	9,246	54.3	20.3	0.0	100.0
	Democrat vote share	9,246	42.1	21.0	0.0	100.0
Senate election	Republican vote share	9,246	51.8	14.2	5.1	93.3
	Democrat vote share	9,246	45.2	14.4	5.5	94.9
Presidential election	Republican vote share	9,246	54.3	12.8	7.9	94.1
	Democrat vote share	9,246	40.3	12.1	4.2	90.9

		Obs.	Mean	Std. Dev.	Min	Max
Demographic data	Share of immigrants	27,738	4.1	5.9	0.0	62.2
	Share of low-skilled immigrants	27,738	1.5	2.7	0.0	36.5
	Share of high-skilled immigrants	27,738	2.4	3.3	0.0	47.5
	Share of low-skilled natives	27,738	19.0	7.6	4.5	47.3
	African-American	27,738	9.4	11.6	0.0	64.4
	Share of urban population	27,738	28.8	31.1	0.0	100.0
	Average income	27,738	22,866	4,353	13,710	42,280
	Share of males	27,738	48.4	1.3	44.5	55.3
	Unemployment rate	27,738	4.1	1.4	1.5	10.9
	Bartik instrument for employment	27,738	12.8	19.1	-106.8	118.3
	Autor Dorn Hanson instrument for trade	27,738	2.6	0.8	-2.8	5.1

Table 2: Republican vote share and immigrant share
OLS estimates, U.S. Counties, all elections 1990, 2000 and 2010

	(1)	(2)	(3)	(4)
Election type	Pooled	PE	SE	HE
	Panel A			
Share of immigrants	-0.310***	-0.410***	-0.215*	-0.306**
	[0.0736]	[0.101]	[0.112]	[0.146]
Election fixed effects	yes	no	no	no
Commuting zone control variables	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes
	Panel B			
Share of low-skilled immigrants	0.872***	0.905***	0.468	1.219***
	[0.224]	[0.224]	[0.438]	[0.411]
Share of high-skilled immigrants	-0.744***	-0.906***	-0.462**	-0.854***
	[0.115]	[0.149]	[0.228]	[0.189]
Election fixed effects	yes	no	no	no
Commuting zone control variables	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes
Observations	27,738	9,246	9,246	9,246
Number of counties	3082	3082	3082	3082

Note: The dependent variable is the Republican vote share in a county and year. The explanatory variable is equal to immigrants as a share of the adult population. Method of estimation is least squares. Specifications (1) and (5) include all elections pooled. Specifications (2) and (6) include only presidential election (PE), specifications (3) and (7) include Senate elections (SE) and specifications (4) and (8) include only House elections (HE). Each regression is weighted by the population of the county. All regressions include county, election as well as year fixed effects. Specifications (5)-(8) also include the following controls at the commuting zone level: share of low-skilled natives, share of men, share of black, share of hispanic, share of unemployed and average income per person in the voting population as well as the Bartik employment shifter described in the text and the Import competition shock as defined in Autor, Dorn and Hanson (2013). Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

Table 3: Republican vote share and immigrant share
OLS estimates, U.S. Counties, all elections 1990, 2000 and 2010

Specification	(1) Pooled, all immigrants	(2) Pooled, industrial countries only	(3) Pooled, only from Mexico	(4) Pooled, only non-citizens
Share of low-skilled immigrants	0.872***			
	[0.224]			
Share of high-skilled immigrants	-0.744***			
	[0.115]			
Share of low-skilled immigrants from industrial countries		1.326***		
		[0.299]		
Share of high-skilled immigrants from industrial countries		-1.001***		
		[0.363]		
Share of low-skilled immigrants from non-industrial countries		-0.0901		
		[0.533]		
Share of high-skilled immigrants from non-industrial countries		-0.636***		
		[0.119]		
Share of low-skilled immigrants from Mexico			0.949***	
			[0.302]	
Share of high-skilled immigrants from Mexico			-0.780**	
			[0.353]	
Share of low-skilled immigrants from all other countries			0.841	
			[0.585]	
Share of high-skilled immigrants from all other countries			-0.752***	
			[0.140]	
Share of low-skilled non-citizen immigrants				0.919***
				[0.278]
Share of high-skilled non-citizen immigrants				-1.349***
				[0.250]
Share of low-skilled citizen immigrants				1.552***
				[0.554]
Share of high-skilled citizen immigrants				-0.380**
				[0.150]
Election fixed effects	yes	yes	yes	yes
Commuting zone control variables	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes
Observations	27,738	27,738	27,357	27,738

Note: The dependent variable is the Republican vote share in a county and year. The explanatory variable is equal to immigrants as a share of the adult population. Method of estimation is least squares. All regressions include county, election as well as year fixed effects. Specification (1) reproduces column 1 in panel b of the previous table. Specification (2) distinguishes between the skill level of immigrants and whether immigrants are from an industrialized (OECD) country. Specification (3) distinguishes between the skill level of immigrants and whether immigrants are from Mexico. Specification (4) distinguishes between the skill level of immigrants and whether immigrants are naturalized and allowed to vote in the U.S. All specifications also include the following controls at the commuting zone level: share of low-skilled natives, share of men, share of black, share of hispanic, share of unemployed and average income per person in the voting population as well as the Bartik employment shifter described in the text and the Import competition shock as defined in Autor, Dorn and Hanson (2013). Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

Table 4: Voter turnout

OLS estimates, presidential and Senate elections pooled 1990, 2000 and 2010

	(1)	(2)	(3)	(4)
Election type	Pooled	Pooled	Pooled	Pooled
Share of immigrants	0.0382	-0.116**		
	[0.0552]	[0.0570]		
Share of low-skilled immigrants at county level			0.0167	-0.0103
			[0.519]	[0.451]
Share of high-skilled immigrants at county level			0.0405	-0.154
			[0.171]	[0.176]
Election fixed effects	yes	yes	yes	yes
Commuting zone control variables	no	yes	no	yes
Time fixed effects	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes
Observations	18,492	18,492	18,492	18,492
R-squared	0.821	0.832	0.821	0.833

Note: The dependent variable is voter turnout, defined as the total number of votes divided by the sum of natives and citizen immigrants. Each column is a different specification and includes county effects, time effects and county and commuting zone controls. We pooled over presidential and Senate elections (data on the number of votes for House elections are missing). The years considered are 1990, 2000 and 2010. Method of estimation is least squares. Each regression is weighted by the population of the county. Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

Table 5: Republican vote share, low-skilled and high-skilled immigrants
2SLS estimates, all elections 1990, 2000 and 2010

Second stage	(1) Pooled	(2) Pooled	(3) Pooled	(4) Pooled	(5) Pooled	(6) Pooled
Share of low-skilled immigrants at county level	4.656**		1.278	2.394***		1.319**
	[2.334]		[1.072]	[0.920]		[0.590]
Share of high-skilled immigrants at county level		-1.674***	-1.521***		-1.018***	-0.782***
		[0.158]	[0.186]		[0.150]	[0.179]
Commuting zone control variables	no	no	no	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes	yes	yes
Observations	27,738	27,738	27,738	27,738	27,738	27,738
R-squared	0.633	0.712	0.717	0.710	0.725	0.729
IV F-stat	9.770	38.68	6.176	13.77	59.69	14.71

First stage	Share of low-skilled immigrants	Share of high-skilled immigrants	Share of low-skilled immigrants	Share of high-skilled immigrants
Predicted share of low-skilled immigrants	0.498***	-0.289*	0.603***	-0.0383
at county level	[0.114]	[0.152]	[0.115]	[0.111]
Predicted share of high-skilled immigrants	-0.185**	0.870***	-0.233***	0.737***
at county level	[0.0783]	[0.112]	[0.0809]	[0.0929]
Observations	27,738	27,738	27,738	27,738
R-squared	0.972	0.974	0.978	0.980

Note: The top panel of the table shows the 2SLS estimates. The dependent variable is the Republican vote share in a county and year. Each column corresponds to a different estimation. The relevant explanatory variables are two: low-skilled immigrants as the share of the adult population and high-skilled immigrants as the share of the adult population. Specifications (4) - (6) include the following controls at the commuting zone level: share of low-skilled natives, share of men, share of black, share of hispanic, share of unemployed and average income per person in the voting population as well as the Bartik employment shifter described in the text and the Import competition shock as defined in Autor, Dorn and Hanson (2013). The bottom panel represents the first stage and shows how the imputed share of low-skilled and high-skilled immigrants predicts the actual shares. Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

Table 6: Lagged Republican share of votes and change in share of immigrants for each skill level
OLS estimates, all elections 1990, 2000 and 2010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A				
Dependent variable	Change in the share of low-skilled immigrants				Change in the share of high-skilled immigrants			
Mean Republican vote share 10 years ago	0.0242***	-0.0381**	0.0362	0.0252	0.0327***	0.0213	0.0221	0.0176
	[0.00741]	[0.0173]	[0.0286]	[0.0227]	[0.00875]	[0.0150]	[0.0222]	[0.0204]
Commuting zone control variables	no	yes	no	yes	no	yes	no	yes
County fixed effects	no	no	yes	yes	no	no	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Observations	6,164	6,164	6,164	6,164	6,164	6,164	6,164	6,164
R-squared	0.079	0.028	0.714	0.932	0.202	0.379	0.747	0.938
				Panel B				
Dependent variable	Change in the predicted share of low-skilled immigrants				Change in the predicted share of high-skilled immigrants			
Mean Republican vote share 10 years ago	0.00543***	-0.0344	0.0277	-0.00613	0.00273	-0.0279	0.0155	-0.00303
	[0.00190]	[0.0240]	[0.0294]	[0.00419]	[0.00185]	[0.0151]	[0.0187]	[0.00284]
Commuting zone control variables	no	yes	no	yes	no	yes	no	yes
County fixed effects	no	no	yes	yes	no	no	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Observations	6,164	6,164	6,164	6,164	6,164	6,164	6,164	6,164
R-squared	0.086	0.157	0.498	0.996	0.354	0.648	0.602	0.997

Note: The sample period is 1990, 2000 and 2010. Specifications (2), (4), (6) and (8) in panel a and b include the following controls at the commuting zone level: the change in the share of low-skilled natives, the change in the share of men, the change in the share of black, the change in the share of hispanic, the change in the share of unemployed and average income per person in the voting population as well as the change in the Bartik employment shifter described in the text and the change in the Import competition shock as defined in Autor, Dorn and Hanson (2013). Each regression is weighted by the population of the county. All regressions include year effects. Robust standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

Table 7: Heterogeneous effects: labour market, welfare and non-economic channel

OLS estimates, all elections pooled 1990, 2000 and 2010

Channel	Labor market		Welfare	Cultural differences	All together
	(1)	(2)	(3)	(4)	(5)
Election type	Pooled	Pooled	Pooled	Pooled	Pooled
Share of low-skilled immigrants at county level (CL)	0.221	0.469*	0.448	0.954***	0.491
	[0.225]	[0.256]	[0.375]	[0.307]	[0.425]
Share of high-skilled immigrants at CL	-0.296**	-0.680***	-0.646***	-0.338**	-0.0600
	[0.132]	[0.110]	[0.162]	[0.143]	[0.142]
Share of low-skilled immigrants at CL interacted with unskilled to skilled ratio in 1980	3.004***				2.493***
	[0.774]				[0.799]
Share of high-skilled immigrants at CL interacted with unskilled to skilled ratio in 1980	-2.464***				-2.016***
	[0.576]				[0.518]
Share of low-skilled immigrants at CL interacted with share of rural population in 1980		1.419***			0.507
		[0.442]			[0.592]
Share of high-skilled immigrants at CL interacted with share of rural population in 1980		-0.513			-0.190
		[0.323]			[0.328]
Share of low-skilled immigrants at CL interacted with ratio of govt. exp. to GDP in 1980			1.071*		-0.282
			[0.648]		[0.760]
Share of high-skilled immigrants at CL interacted with ratio of govt. exp. to GDP in 1980			-0.260		0.103
			[0.263]		[0.185]
Share of low-skilled immigrants at CL interacted with language differences in 1980				0.729	0.111
				[0.850]	[0.839]
Share of high-skilled immigrants at CL interacted with language differences in 1980				-2.129***	-1.731***
				[0.488]	[0.434]
Election fixed effects	yes	yes	yes	yes	yes
Commuting zone control variables	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes	yes
Observations	27.738	27.738	27.738	27,738	27,738
R-squared	0.732	0.730	0.729	0.732	0.734

Note: The dependent variable is the Republican vote share. Each column is a different specification and includes county effects, time effects and county and commuting zone (CZ) controls. We pooled over all three types of elections. The coefficients shown are those for the share of low-skilled immigrants and the share of high-skilled immigrants together with the interaction between each skill level of immigrants and one CZ characteristic in 1980, measured as an index between 0 and 1. The interacted characteristics are included one at a time in specifications (1)-(4) and all together in specification (5). The years considered are 1990, 2000 and 2010. Method of estimation is least squares. Each regression is weighted by the population of the county. Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

Table 8: Heterogeneous effects: labour market, welfare and non-economic channel

2SLS estimates, all elections pooled 1990, 2000 and 2010

Channel	Labor market		Welfare	Cultural differences
	(1)	(2)	(3)	(4)
Election type	Pooled	Pooled	Pooled	Pooled
Share of low-skilled immigrants at county level (CL)	-1.391	0.874	0.159	-0.726
	[1.211]	[0.698]	[0.814]	[1.006]
Share of high-skilled immigrants at CL	-0.641**	-0.637***	-0.655***	-0.423**
	[0.295]	[0.172]	[0.211]	[0.215]
Share of low-skilled immigrants at CL interacted with unskilled-to-skilled ratio in 1980	14.76**			
	[7.197]			
Share of high-skilled immigrants at CL interacted with unskilled-to-skilled ratio in 1980	-0.414			
	[1.149]			
Share of low-skilled immigrants at CL interacted with share of rural population in 1980		3.851*		
		[2.292]		
Share of high-skilled immigrants at CL interacted with share of rural population in 1980		-1.191*		
		[0.668]		
Share of low-skilled immigrants at CL interacted with share of govt. expenditure in 1980			3.255	
			[2.510]	
Share of high-skilled immigrants at CL interacted with share of govt. expenditure in 1980			-0.231	
			[0.265]	
Share of low-skilled immigrants at CL interacted with language differences in 1980				6.798*
				[3.686]
Share of high-skilled immigrants at CL interacted with language differences in 1980				-3.547***
				[0.692]
Election fixed effects	yes	yes	yes	yes
Commuting zone control variables	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes
Observations	27,738	27,738	27,738	27,738
R-squared	0.697	0.725	0.727	0.727
IV F-stat	4.784	1.292	1.391	3.050

Note: The dependent variable is the Republican vote share. Each column is a different specification and includes county effects, time effects and county and commuting zone (CZ) controls. We pooled over all three types of elections. The coefficients shown are those for the share of low-skilled immigrants and the share of high-skilled immigrants together with the interaction between each skill level of immigrants and one CZ characteristic in 1980, measured as an index between 0 and 1. The interacted characteristics are included one at a time in specifications (1)-(4) and all together in specification (5). The years considered are 1990, 2000 and 2010. Method of estimation is instrumental varibale (IV), using the shift-share instruments described in the text. Each regression is weighted by the population of the county. Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively..

Table 9: Republican vote share, low-skilled and high-skilled immigrants including immigration shares at the State level

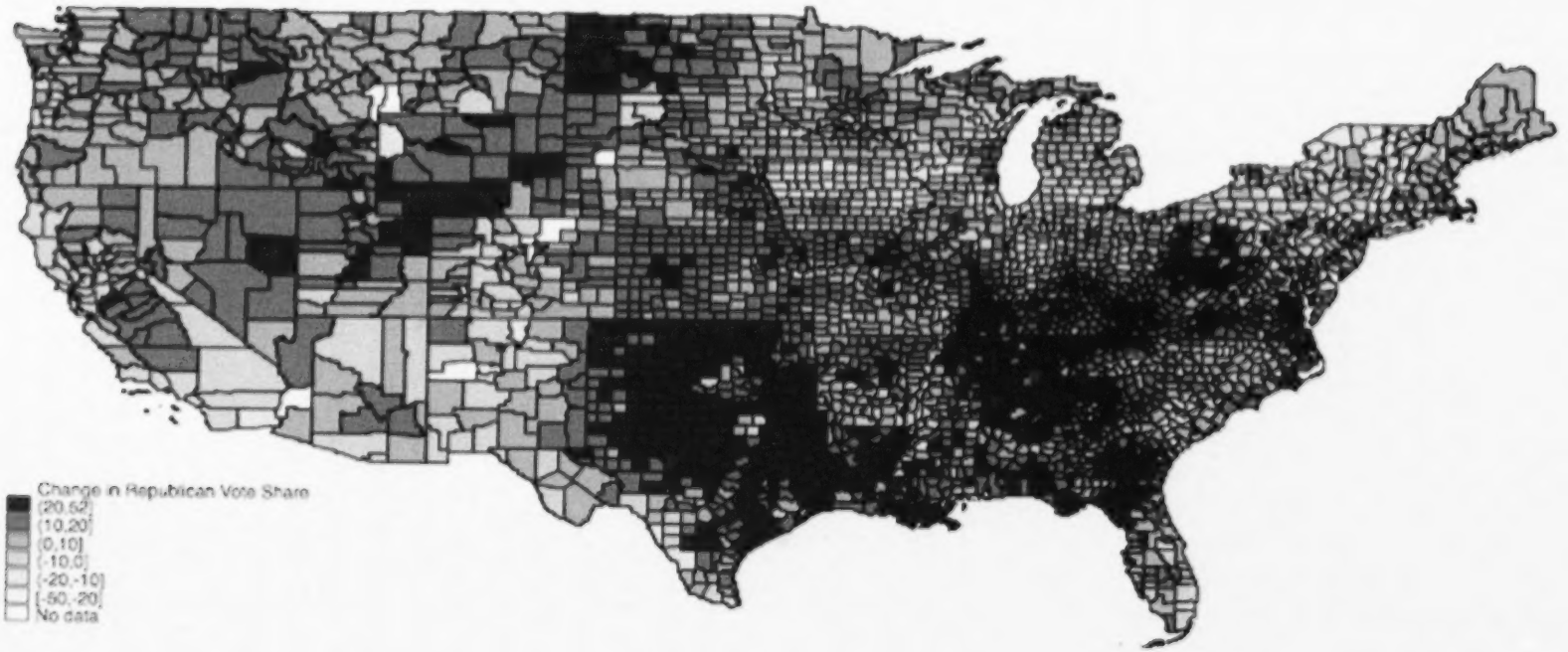
OLS estimates, all elections 1990, 2000 and 2010

	(1)	(2)	(3)	(4)
Election type	Pooled	Pooled	Pooled	Pooled
Share of immigrants at county level	-0.837***	-0.401***		
	[0.0954]	[0.0776]		
Share of immigrants at state level	0.164	0.483***		
	[0.276]	[0.164]		
Share of low-skilled immigrants at county level			0.859**	0.818***
			[0.340]	[0.236]
Share of high-skilled immigrants at county level			-1.405***	-0.891***
			[0.203]	[0.135]
Share of low-skilled immigrants at state level			1.134**	0.716*
			[0.532]	[0.411]
Share of high-skilled immigrants at state level			0.245	0.574***
			[0.220]	[0.177]
Election fixed effects	yes	yes	yes	yes
Commuting zone control variables	no	yes	no	yes
Time fixed effects	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes
Observations	27,738	27,738	27,738	27,738
R-squared	0.707	0.726	0.719	0.731

Note: The sample period is 1990, 2000 and 2010. Specifications (2) and (4) include the following controls at the commuting zone level: the change in the share of low-skilled natives, the change in the share of men, the change in the share of black, the change in the share of hispanic, the change in the share of unemployed and average income per person in the voting population as well as the change in the Bartik employment shifter described in the text and the change in the Import competition shock as defined in Autor, Dorn and Hanson (2013). Each regression is weighted by the population of the county. All regressions include year effects. Robust standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

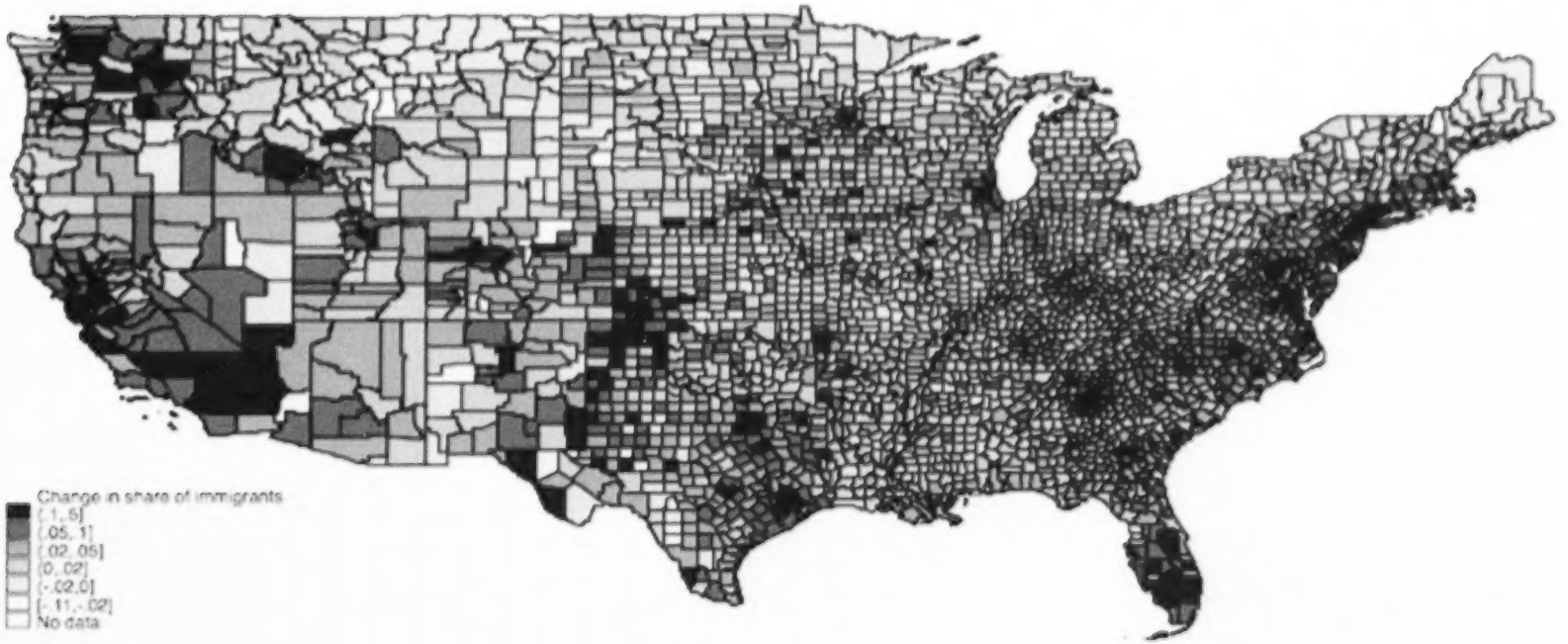
Figure 1: Change in average Republican vote share between 1990 and 2010

Pooling across all elections



Note: The map represents the change of the average Republican vote share (pooled across all elections) from 1990 to 2010, using red color for larger change and blue color for negative changes.

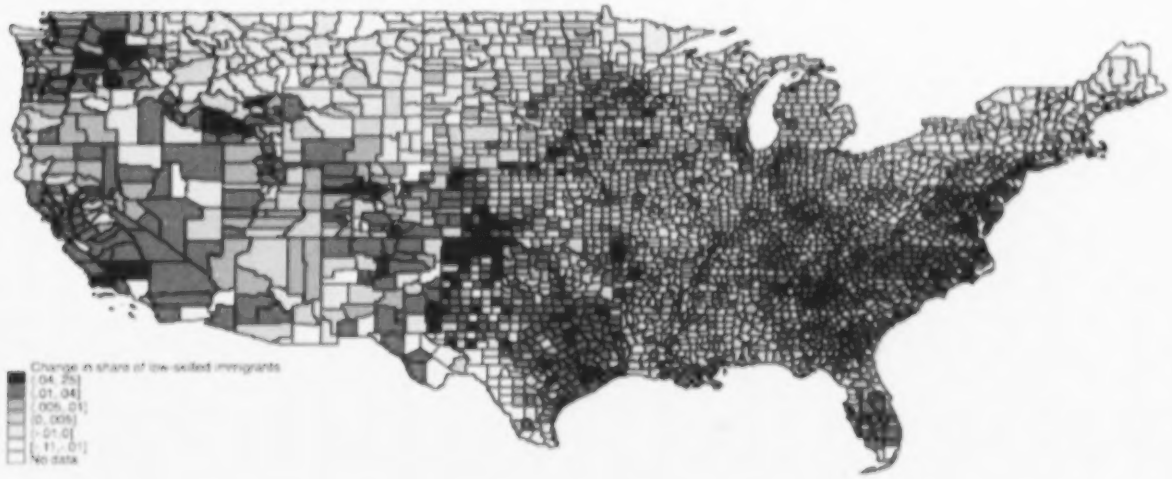
Figure 2: Change in share of immigrants between 1990 and 2010 per U.S. county



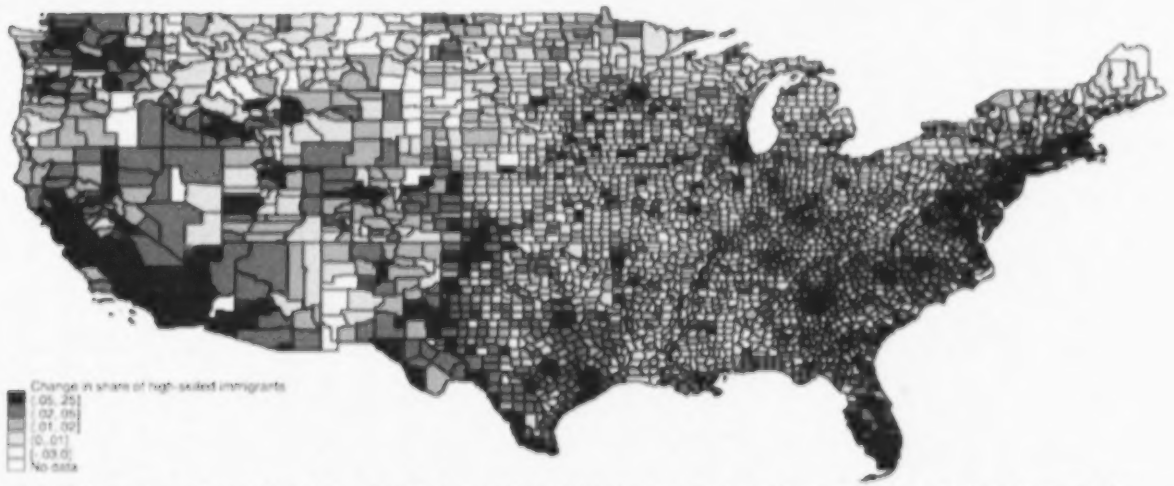
Note: The map represents the change of the share of immigrants from 1990 to 2010, using darker color for positive changes and brighter color for negative changes.

Figure 3: Change in share of low- and high-skilled immigrants between 1990 and 2010 per U.S. county

Panel (a): Change in share of low-skilled immigrants in population (1990-2010)

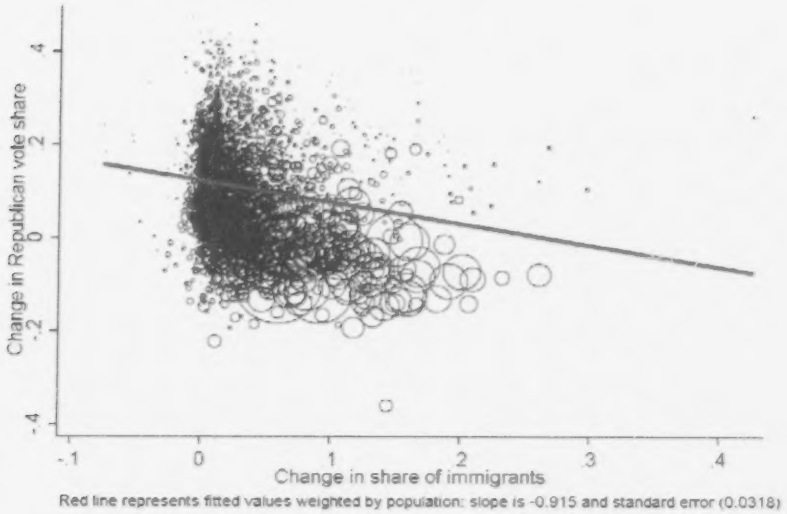


Panel (b): Change in share of high-skilled immigrants in voting population (1990-2010)



Note: The maps represent the change of the share of low-skilled immigrants in the population and the change in the share of high-skilled immigrants in the voting population between 1990 to 2010, using darker color for positive changes and white for negative changes.

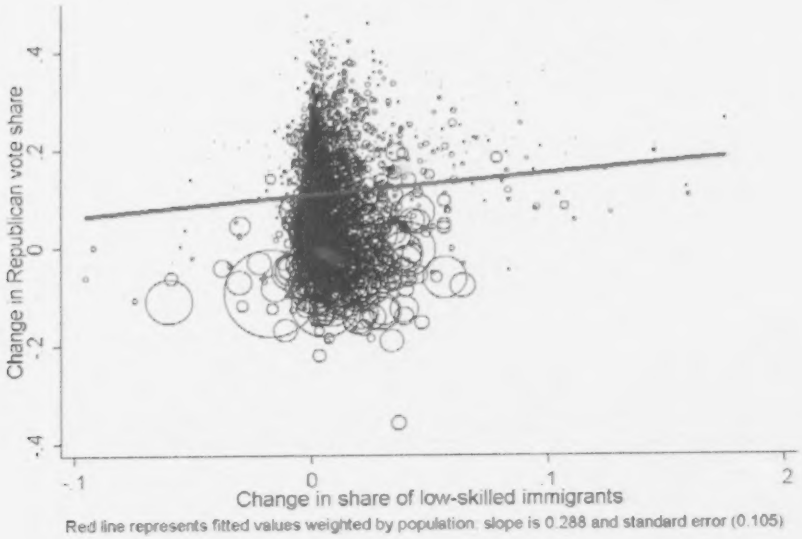
Figure 4: Correlation between the change in the Republican vote share and the change in the immigrant population share between 1990 and 2010



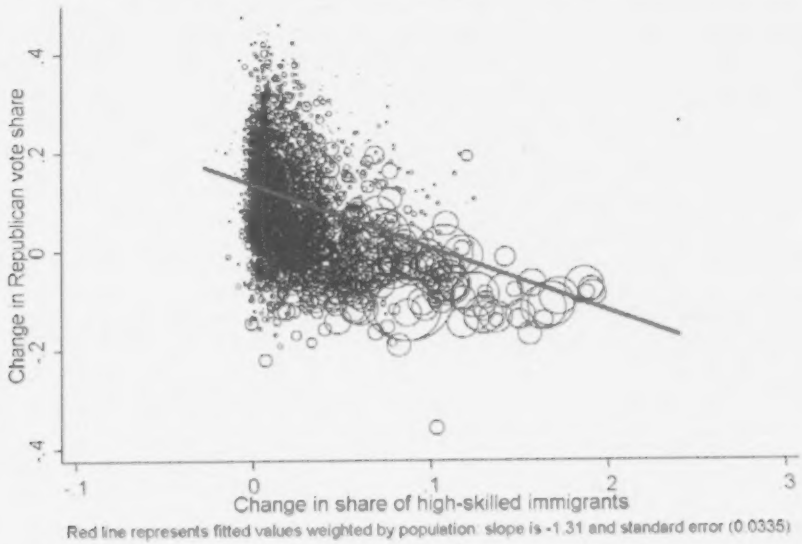
Note: Each point represents a U.S. county weighted by its voting age population. The vertical axis shows the average change in the share of Republican vote in all elections, and the horizontal axis shows the change in the share of immigrants in the adult population.

Figure 5: Correlation between the change in the Republican vote share and the change in the low-skilled and high-skilled immigrant population share between 1990 and 2010

Panel (a): Change in share of low-skilled immigrants in population (1990-2010)



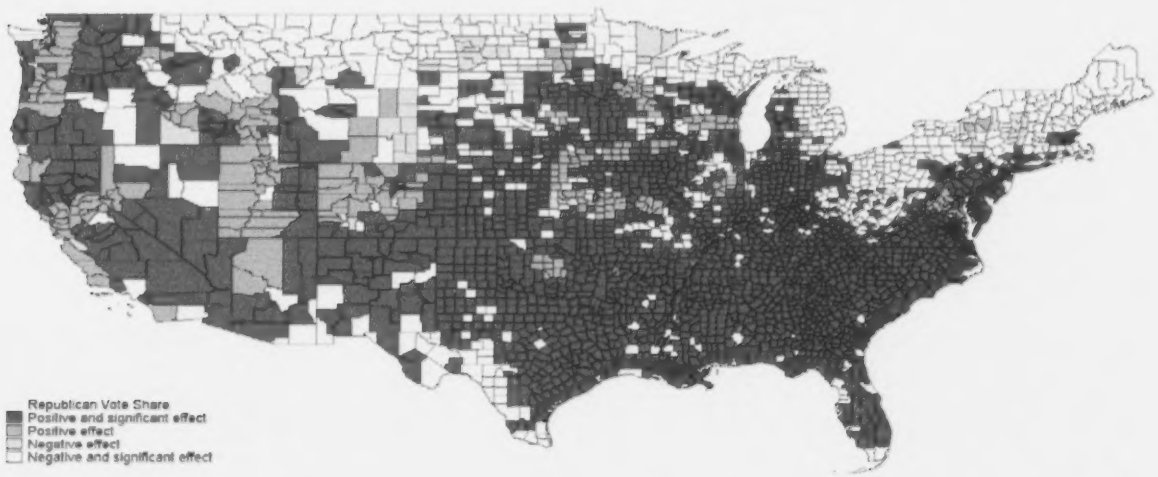
Panel (b): Change in share of high-skilled immigrants in voting population (1990-2010)



Note: Each point represents a U.S. county weighted by its voting age population. The vertical axis shows the average change in the share of Republican vote in all elections, and the horizontal axis shows the change in the share of low-skilled immigrants in the adult population and the change in the share of high-skilled immigrants in the voting population respectively.

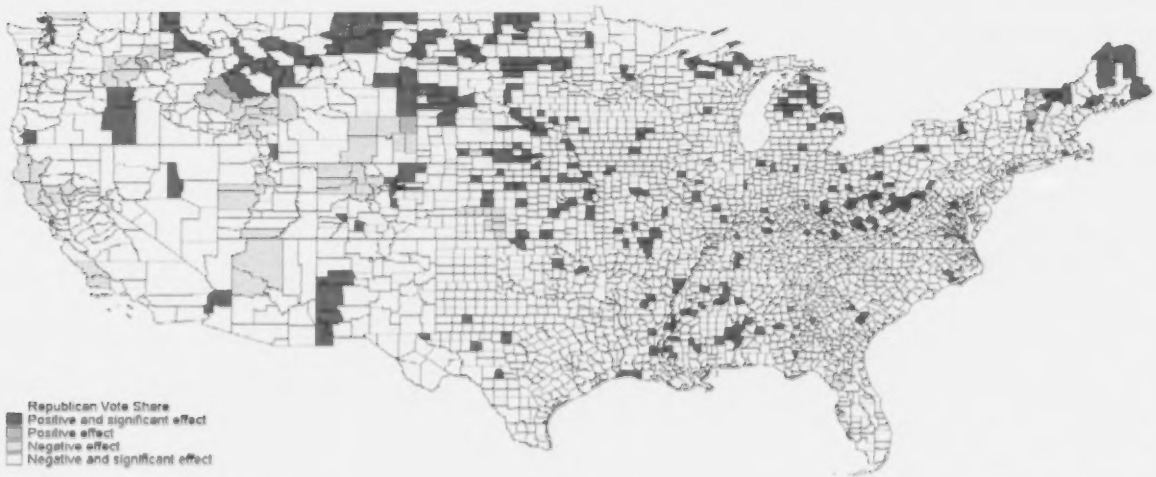
Figure 6: Marginal effect of the change in the share of low-skilled and high-skilled immigrants between 1990 and 2010 on the Republican vote share across counties

Panel (a): Significant impact of the **change in the share of low-skilled immigrants** between 1990 and 2010 on the Republican vote share with 95% confidence



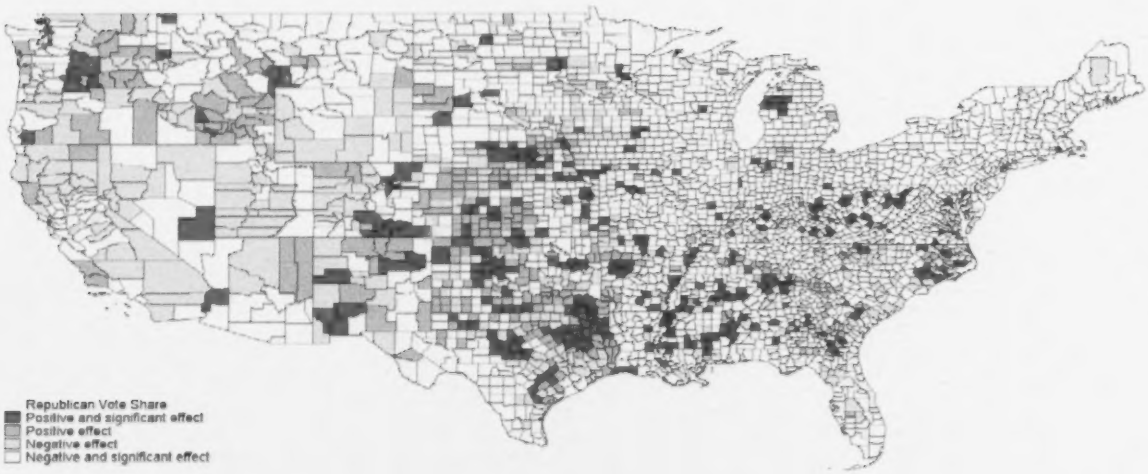
Note: The continuous impact is calculated using the coefficients in Table 7, i.e. (0.491 + 2.493 x cum. share of skilled vs. unskilled + 0.507 x cum. share of rural population - 0.282 x cum. share of government expenditure in GDP + 0.111 x language difference) x change in share of low-skilled immigrants between 1990 and 2010.

Panel (b): Significant impact of the **change in the share of high-skilled immigrants** between 1990 and 2010 on the Republican vote share with 95% confidence



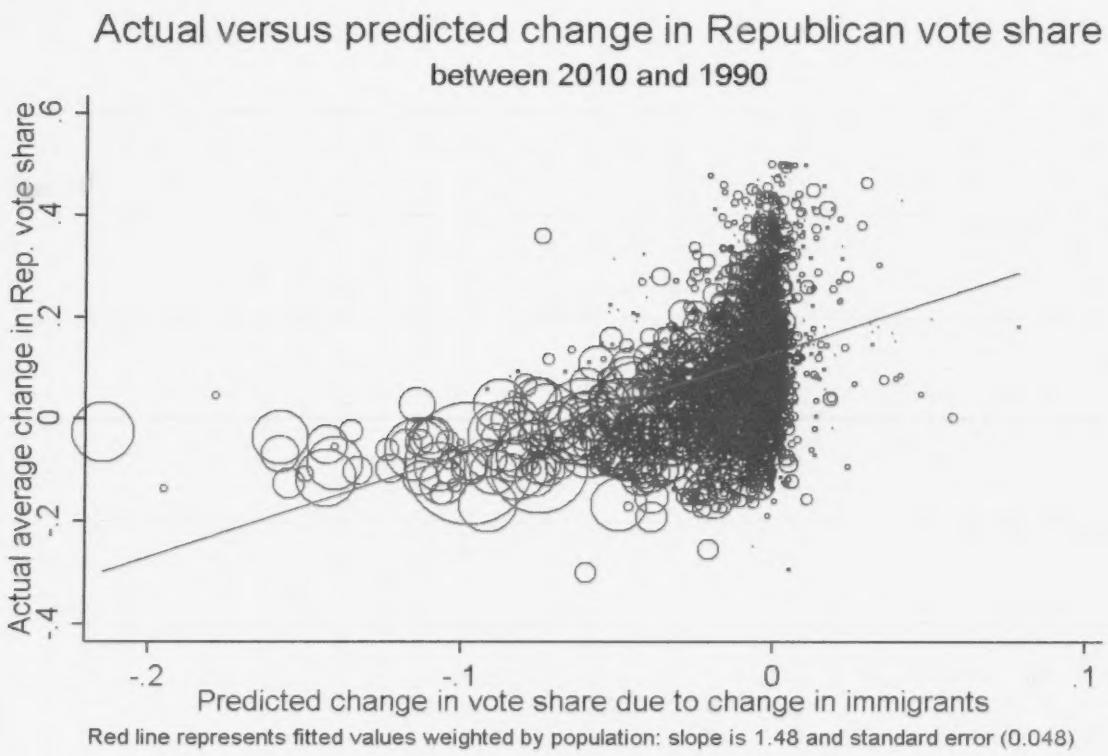
Note: The continuous impact is calculated using the coefficients in Table 7, i.e. (- 0.06 - 2.016 x cum. share of skilled vs. unskilled - 0.190 x cum. share of rural population + 0.103 x cum. share of government expenditure in GDP - 1.731 x language difference) x change in share of high-skilled immigrants between 1990 and 2010.

Figure 7: Marginal effect of the change in the share of immigrants between 1990 and 2010 (separated between low-skilled and high-skilled immigrants) on the Republican vote share across counties with 95% confidence, 2010



Note: The continuous impact is calculated using the coefficients in Table 7, i.e. (0.491 + 2.493 x cum. share of skilled vs. unskilled + 0.507 x cum. share of rural population - 0.282 x cum. share of government expenditure in GDP + 0.111 x language difference) x change in share of low-skilled immigrants between 1990 and 2010 + (- 0.06 - 2.016 x cum. share of skilled vs. unskilled - 0.190 x cum. share of rural population + 0.103 x cum. share of government expenditure in GDP - 1.731 x language difference) x change in share of high-skilled immigrants between 1990 and 2010.

Figure 8: Actual versus predicted change in the Republican vote share due to the change in the immigrant population share between 1990 and 2010



Note: Each point represents a U.S. county weighted by its voting age population. The vertical axis shows the actual change in the average share of Republican vote between 1990 and 2010 across all election types, and the horizontal axis shows the predicted change in the Republican vote share due to the change in the share of immigrants in the adult population between 1990 and 2010.

Appendix

Table A1: Republican vote share, low-skilled and high-skilled non-citizen immigrants

2SLS estimates, all elections 1990, 2000 and 2010

Second stage	(1) Pooled	(2) Pooled	(3) Pooled	(4) Pooled	(5) Pooled	(6) Pooled
Share of low-skilled non-citizen immigrants at county level	4.473*		2.139	1.875*		1.900**
	[2.690]		[1.450]	[0.966]		[0.816]
Share of high-skilled non-citizen immigrants at county level		-6.369***	-5.914***		-3.468***	-3.478***
		[2.187]	[1.725]		[0.745]	[0.751]
Commuting zone control variables	no	no	no	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes	yes	yes
Observations	27,738	27,738	27,738	27,738	27,738	27,738
R-squared	0.663	0.655	0.689	0.720	0.716	0.725
IV F-stat	11.02	4.052	5.892	11.62	16.75	21.82

First stage	Share of low-skilled non-citizen immigrants	Share of high-skilled non-citizen immigrants	Share of low-skilled non-citizen immigrants	Share of high-skilled non-citizen immigrants
Predicted share of low-skilled non-citizen immigrants at county level	0.414***	-0.0590	0.447***	-0.0194
	[0.109]	[0.0749]	[0.109]	[0.0698]
Predicted share of high-skilled non-citizen immigrants at county level	-0.187	0.355***	-0.144	0.369***
	[0.134]	[0.130]	[0.0967]	[0.0965]
Observations	27,738	27,738	27,738	27,738
R-squared	0.958	0.966	0.964	0.973

Note: The top panel of the table shows the 2SLS estimates. The dependent variable is the Republican vote share in a county and year. Each column corresponds to a different estimation. The relevant explanatory variables are two: low-skilled non-citizen immigrants as a share of the adult population and high-skilled non-citizen immigrants as a share of the adult population. Specifications (4) - (6) include the following controls at the commuting zone level: share of low-skilled natives, share of men, share of black, share of hispanic, share of unemployed and average income per person in the voting population as well as the Bartik employment shifter described in the text and the Import competition shock as defined in Autor, Dorn and Hanson (2013). The bottom panel represents the first stage and shows how the imputed share of low-skilled and high-skilled non-citizen immigrants predicts the actual shares. Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

Table A2: Heterogeneous effects: labour market, welfare and non-economic channel
OLS estimates, all elections pooled 1990, 2000 and 2010

Channel	Labor market		Welfare	Cultural differences	All together
	(1)	(2)	(3)	(4)	(5)
Election type	Pooled	Pooled	Pooled	Pooled	Pooled
Share of low-skilled non-citizen immigrants	0.587**	0.997***	0.975**	1.302***	0.736*
at county level (CL)	[0.288]	[0.338]	[0.447]	[0.326]	[0.439]
Share of high-skilled non-citizen immigrants	-0.959***	-1.726***	-1.581***	-1.081***	-0.440
at CL	[0.274]	[0.269]	[0.353]	[0.326]	[0.343]
Share of low-skilled non-citizen immigrants at	3.509***				3.572***
CL interacted with unskilled-to-skilled ratio	[0.867]				[1.103]
Share of high-skilled non-citizen immigrants at	-3.652***				-3.674***
CL interacted with unskilled-to-skilled ratio	[0.925]				[1.001]
Share of low-skilled non-citizen immigrants at		1.115**			0.00392
CL interacted with rural population		[0.555]			[0.851]
Share of high-skilled non-citizen immigrants at		-0.0957			-0.408
CL interacted with rural population		[0.532]			[0.878]
Share of low-skilled non-citizen immigrants at			1.060		1.021
CL interacted with ratio of govt. exp. to GDP			[0.764]		[0.661]
Share of high-skilled non-citizen immigrants at			-0.621		-0.265
CL interacted with ratio of govt. exp. to GDP			[0.640]		[0.609]
Share of low-skilled non-citizen immigrants at				1.258	0.284
CL interacted with language differences				[0.983]	[0.991]
Share of high-skilled non-citizen immigrants at				-3.361***	-2.766***
CL interacted with language differences				[1.053]	[0.960]
Election fixed effects	yes	yes	yes	yes	yes
Commuting zone control variables	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes	yes
Observations	27,738	27,738	27,738	27,738	27,738
R-squared	0.730	0.729	0.729	0.731	0.732

Note: The dependent variable is the Republican vote share. Each column is a different specification and includes county effects, time effects and county and commuting zone (CZ) controls. We pooled over all three types of elections. The coefficients shown are those for the share of low-skilled non-citizen immigrants and the share of high-skilled non-citizen immigrants together with the interaction between each skill level of immigrants and one CZ characteristic in 1980, measured as an index between 0 and 1. The interacted characteristics are included one at a time in specifications (1)-(4) and all together in specification (5). The years considered are 1990, 2000 and 2010. Method of estimation is least squares. Each regression is weighted by the population of the county. Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.

Table A3: Heterogeneous effects: labour market, welfare and non-economic channel
2SLS estimates, all elections pooled 1990, 2000 and 2010

Channel	Labor market		Welfare	Cultural differences
	(1)	(2)	(3)	(4)
Election type	Pooled	Pooled	Pooled	Pooled
Share of low-skilled non-citizen immigrants	-1.499	1.440	-1.472	-1.132
at county level (CL)	[1.809]	[1.286]	[1.866]	[1.620]
Share of high-skilled non-citizen immigrants	-2.495	-2.474***	-2.196***	-1.628*
at CL	[1.591]	[0.919]	[0.711]	[0.846]
Share of low-skilled non-citizen immigrants at	24.82*			
CL interacted with unskilled-to-skilled ratio	[14.83]			
Share of high-skilled non-citizen immigrants at	-3.244			
CL interacted with unskilled-to-skilled ratio	[5.041]			
Share of low-skilled non-citizen immigrants at		7.504		
CL interacted with rural population		[4.858]		
Share of high-skilled non-citizen immigrants at		-3.988*		
CL interacted with rural population		[2.406]		
Share of low-skilled non-citizen immigrants at			10.24*	
CL interacted with ratio of govt. exp. to GDP			[6.047]	
Share of high-skilled non-citizen immigrants at			-2.341	
CL interacted with ratio of govt. exp. to GDP			[2.011]	
Share of low-skilled non-citizen immigrants at				24.86*
CL interacted with language differences				[13.40]
Share of high-skilled non-citizen immigrants at				-17.72***
CL interacted with language differences				[6.766]
Election fixed effects	yes	yes	yes	yes
Commuting zone control variables	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes
County fixed effects	yes	yes	yes	yes
Observations	27,738	27,738	27,738	27,711
R-squared	0.659	0.715	0.715	0.683
IV F-stat	1.738	0.495	1.070	2.956

Note: The dependent variable is the Republican vote share. Each column is a different specification and includes county effects, time effects and county and commuting zone (CZ) controls. We pooled over all three types of elections. The coefficients shown are those for the share of low-skilled non-citizen immigrants and the share of high-skilled non-citizen immigrants together with the interaction between each skill level of immigrants and one CZ characteristic in 1980, measured as an index between 0 and 1. The interacted characteristics are included one at a time in specifications (1)-(4). The years considered are 1990, 2000 and 2010. Method of estimation is instrumental variable (IV), using the shift-share instruments described in the text. Each regression is weighted by the population of the county. Standard errors in parentheses are clustered by commuting zone: ***, **, * indicate the statistically significant difference from zero at the 1, 5 and 10 percent levels respectively.